

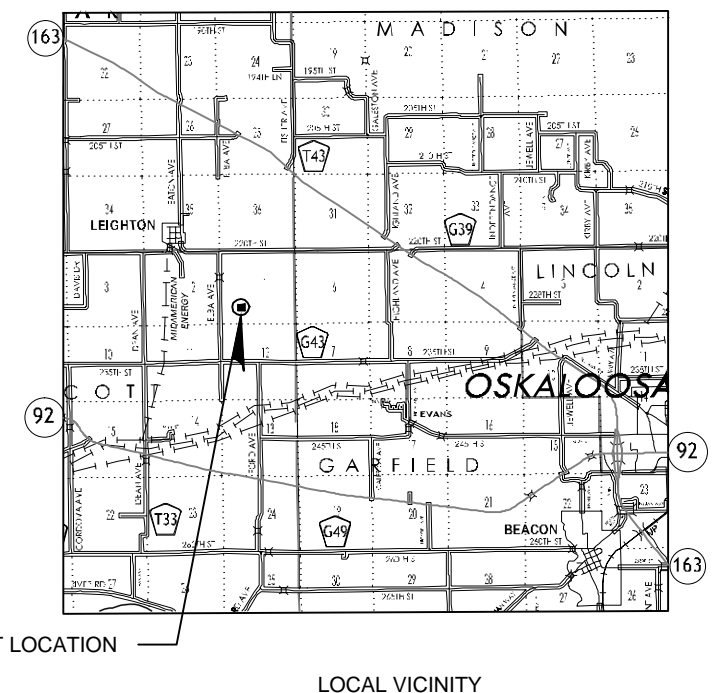
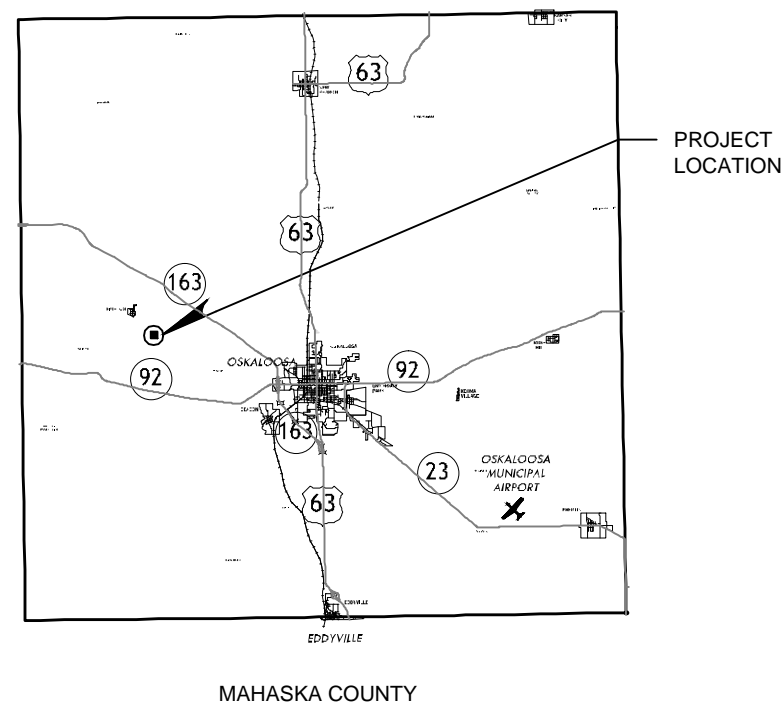
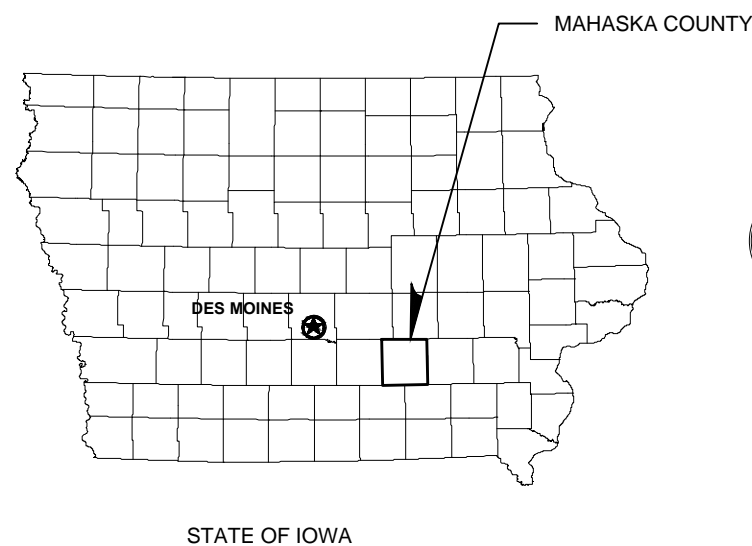
MEMMELAAR (IA-055)

AML RECLAMATION PROJECT

NE ¼ SW ¼ SECTION 01, TOWNSHIP 75N, RANGE 17W, MAHASKA COUNTY

DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

FUNDED BY:
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
GRANT NO: S14AF20004



PREPARED BY AND FOR:
DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
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(515) 281-4246

ENGINEER:
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MINES & MINERALS BUREAU
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INDEX OF SHEETS:

1. TITLE SHEET
2. PROJECT NOTES & ESTIMATED QUANTITIES
3. SITUATION PLAN -- BURN RADII & SURVEY CONTROL
4. SITUATION PLAN -- CLEARING & SITE PREPARATION
5. SURVEY BASELINE #1 DETAILS
6. SURVEY BASELINE #2 DETAILS
7. UNDERCUT & CONTROLLED FILL GRADING PREPARATION PLAN
8. GRADING PLAN
9. CUT & FILL PLAN
10. DRAINAGE & TERRACE PLAN
- 11-16. TYPICAL DETAILS
17. PROJECT SIGNAGE
18. BASELINE #1 CROSS-SECTIONS STA. 0+00 TO STA. 13+00
19. BASELINE #2 CROSS-SECTIONS STA. 41+00 TO STA. 44+00
20. SWPPP NOTES
21. SWPPP BMP's

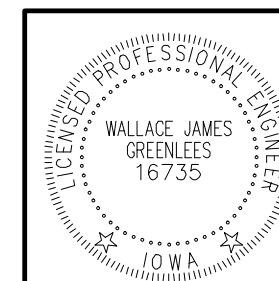


OWNERSHIP OF DOCUMENTS:

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I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa

Signature: *Wallace J. Greenlees* Date: *1-13-2015*
Name (printed or typed): WALLACE JAMES GREENLEES
License Number: 16735
My license renewal date is: 12-31-2016
Pages or sheets covered by this seal: ENTIRE DOCUMENT

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CHKD. BY: MLB	ISSUED: 08-14-2014	REVISED: NONE	NONE
DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246			

DESIGN BY: WJG	DRAWN BY: WJG
MEMMELAAR AML RECLAMATION PROJECT	
TITLE SHEET	

SHEET 1 OF 21

PROJECT NOTES

GENERAL NOTES:

1. ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. THESE INCLUDE STANDARD CONSTRUCTION SPECIFICATIONS SET FORTH BY THE DIVISION OF SOIL CONSERVATION AS WELL AS THE SUPPLEMENTAL SPECIFICATIONS ESTABLISHED BY THE ENGINEER. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.

2. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE DIVISION'S STANDARD SPECIFICATIONS AND THE ENGINEER'S SUPPLEMENTAL SPECIFICATIONS.

3. OWNERSHIP: THIS DOCUMENT, AND THE IDEAS AND DESIGN CONTAINED IN THIS DOCUMENT, ARE AN INSTRUMENT OF PROFESSIONAL SERVICE, AND MAY NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE DIVISION OF SOIL CONSERVATION.

4. REFERENCES TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS ARE INTENDED FOR CLARITY ONLY AND DO NOT REPRESENT EXCLUSION OR ENDORSEMENT BY THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE, SUBJECT TO THE APPROVAL OF THE ENGINEER.

5. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO THE ENGINEER AND/OR DIVISION PRIOR TO COMMENCING CONSTRUCTION.

UTILITY NOTES:

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF ANY CONFLICTS WITH THE DRAWINGS OCCUR. ANY DAMAGE TO EXISTING UTILITIES AND/OR PAVED STREETS CAUSED BY TRENCHING AND GRADING OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE.

2. UNDERGROUND FACILITIES STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS, PUBLIC RECORDS, AND FIELD INVESTIGATION. THEIR LOCATIONS SHALL BE CONSIDERED TO BE APPROXIMATE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT IOWA ONE-CALL AND/OR EACH UTILITY COMPANY FOR THE FIELD LOCATION(S) OF EXISTING UTILITY LINES IN OR NEARBY THE CONSTRUCTION AREA PRIOR TO BEGINNING ANY CONSTRUCTION.

3. THERE MAY BE ADDITIONAL PRIVATE OR OTHER UNDERGROUND UTILITIES NOT SHOWN OR KNOWN AT THE TIME OF THE PUBLICATION OF THIS DRAWING. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXISTENCE AND LOCATION OF ANY ADDITIONAL UNDERGROUND UTILITIES NOT SHOWN ON THIS DRAWING IN ORDER TO AVOID DAMAGE THERETO.

CONSTRUCTION SURVEYING NOTES:

1. THIS DRAWING IS SET TO THE NAD 1983 IOWA STATE PLANE, SOUTH ZONE COORDINATE SYSTEM. ELEVATION INFORMATION IS BASED UPON THE NAVD 1988.

2. EXISTING TOPOGRAPHY SHOWN ON THIS DRAWING WAS DEVELOPED FROM LIDAR INFORMATION THAT IS PUBLICLY AVAILABLE THROUGH THE NATURAL RESOURCES GEOGRAPHIC INFORMATION SYSTEM (NRGIS) LIBRARY. LIDAR DATA WAS COLLECTED IN THE SPRING OF 2008 AND PUBLISHED FEBRUARY 19, 2010, IT IS MADE POSSIBLE THROUGH A PROGRAM OF THE IOWA DEPARTMENT OF NATURAL RESOURCES.

3. NO LOCAL CONTROL POINTS HAVE BEEN ESTABLISHED FOR THIS PROJECT. IF ANY ARE REQUIRED, SUCH WORK BECOMES THE RESPONSIBILITY OF THE CONTRACTOR'S SURVEYOR.

4. SHOULD THERE EXIST SIGNIFICANT DIFFERENCES BETWEEN THE LIDAR ELEVATIONS SHOWN AND THOSE REPORTED BY THE SURVEYOR'S EQUIPMENT, THE SURVEYOR SHALL CALIBRATE THE SURVEYING INSTRUMENTS TO THE LIDAR INFORMATION SHOWN.

TABLE: ESTIMATED QUANTITIES				
ITEM NO.	ITEM	SPEC. SECTION	QTY.	UNITS
1	MOBILIZATION	02100	1	LUMP SUM
2	CLEARING & SITE PREPARATION	02100	11.8	ACRE
3	OFF-SITE WASTE DISPOSAL	02100	100	TON
4	IMOUNDMENT DISCHARGE	02110	1	LUMP SUM
5	SURFACE ROUGHENING	02120	11.2	ACRE
6	STRAW WATTLE, 9" DIA.	02120	75	LF
7	FILTER SOCK, 12" DIA.	02120	1273	LF
8	SILT FENCE	02120	1430	LF
9	RECP, TYPE 3.B	02120	425	SY
10	EXCAVATION	02200	100600	CY
11	SUBGRADE PREP, UNDERCUT	02220	4140	CY
12	CONTROLLED GENERAL FILL PLACEMENT	02220	6960	CY
13	GEOTECHNICAL TESTING SERVICES	02220	1	ACTUAL COST
14	TERRACES	02300	2487	LF
15	DIKES	02300	969	LF
16	CRUSHED STONE BACKFILL, 1" CLEAN	02300	150	TON
17	RIPRAP CLASS E	02300	130	TON
18	RIPRAP SALVAGE & RE-USE	02300	1	LUMP SUM
19	EROSION STONE	02300	96	TON
20	RISER, TERRACE, 6"	02300	6	EACH
21	RISER 1A. DOT SW-513, 4'x4'	02300	3	EACH
22	TILING, 6"	02300	433	LF
23	TILING, 8"	02300	431	LF
24	HDPE DUAL WALL, 6" PERFORATED	02300	132	LF
25	HDPE DUAL WALL PIPE, 10"	02300	203	LF
26	PPHP DUAL WALL PIPE, 15"	02300	182	LF
27	PPHP DUAL WALL PIPE, 18"	02300	243	LF
28	PPHP DUAL WALL PIPE, 24"	02300	60	LF
29	OUTLET, SCH 40 PVC, 6"	02300	2	EACH
30	OUTLET, SCH 40 PVC, 8"	02300	3	EACH
31	OUTLET, SCH 40 PVC, 10"	02300	1	EACH
32	AG LIME, SUBGRADE, (20 TON ECCE/ACRE)	02400	248	TON ECCE
33	WETLAND UNDERCUT & REPLACEMENT	02400	730	CY
34	WETLAND FERTILIZER, N	02400	36	LB
35	WETLAND MULCH, SUBGRADE (5 TON/ACRE)	02400	1.2	ACRE
36	MULCH, SUBGRADE, (5 TON/ACRE)	02400	11	ACRE
37	AG LIME, SEEDING, (5 TON ECCE/ACRE)	02700	56	TON ECCE
38	NITROGEN (N), (80 LB./ACRE)	02700	896	POUNDS
39	PHOSPHOROUS (P), (60 LB./ACRE)	02700	672	POUNDS
40	POTASSIUM (K), (100 LB./ACRE)	02700	1120	POUNDS
41	INTERIM SEEDING	02700	11	ACRES
42	WETLAND FRINGE SEEDING	02700	0.2	ACRES
43	MULCH, SEEDING, 2.0 TON/ACRE	02700	11.2	ACRES

PROJECT CONSTRUCTION NOTES:

1. QUANTITIES OF FERTILIZER AND LIME ARE ESTIMATED FOR BIDDING PURPOSES. ACTUAL QUANTITIES APPLIED WILL BE DETERMINED BY SOIL TESTING.
2. **SPECIAL NOTE:** COMPACT FILL IN CONTROLLED GENERAL FILL AREAS WITH SHEEP'S FOOT ROLLER MEETING IOWA D.O.T. 2001.05A. COMPACTION EFFORT MUCH ACHIEVE AT LEAST 90% OF THE MAXIMUM STANDARD PROCTOR DENSITY OF THE MATERIAL BEING PLACED.
3. CRUSHED STONE BACKFILL USED FOR PIPE IN DEEP FILL AREAS SHALL BE COMPACTED AROUND THE PIPE WITH VIBRATORY OR TAMPING EQUIPMENT.
4. PER SECTION 02400 THE WETLAND RECEIVES TWO (2) TREATMENTS OF SUBGRADE MULCH. THE TREATED WETLAND AREA IS 0.6 ACRES, THUS 0.6x2=1.2 ACRES WETLAND MULCH IS SHOWN.
5. ALSO PER SECTION 02400 THE WETLAND RECEIVES TWO (2) TREATMENTS OF AG LIME, SUBGRADE.

REQUIRED CONSTRUCTION STAKING:

REQUIRED STAKING SHALL INCLUDE THE FOLLOWING WITH APPLICABLE ELEVATION INFORMATION FOR PROPER CONSTRUCTION:

1. PROJECT BOUNDARY & WETLAND EXCLUSION AREA.
2. BOUNDARIES OF SPECIFIED AREAS TO BE UNDERCUT AND BACKFILLED WITH CONTROLLED FILL.
3. TERRACE ALIGNMENT, RISERS, PLUNGE POOLS, & AUXILIARY SPILLWAYS.
4. PROPOSED WETLAND BOUNDARY.

LEGEND

- ELECTRIC LINE

TELEPHONE

SANITARY SEWER

STORM SEWER OR TERRACE DRAIN

WATER LINE

GAS LINE

FIBER OPTIC LINE

TREE LINE

EXISTING FENCE LINE

PROPOSED FENCE CONSTRUCTION

SILT FENCE

TERRACE CHANNEL FLOW DIRECTION

TERRACE RIDGE LINE

DIKE, IMPOUNDMENT RIDGE LINE

¼ MILE BURN RADIUS LIMIT LINE

FILTER SOCK

STRAW WATTLE

EXISTING OR DELINEATED WETLAND BOUNDARY

SURVEY CONTROL POINT

SECTION CORNER FOUND

POWER POLE

TERRACE CHANNEL HIGH POINT

TERRACE RISER LOCATION

FARM HYDRANT

SEEP OR ARTESION

STONE ARMOR-RIPRAP OR EROSION STONE

TIED CONCRETE BLOCK MAT

ROLLED EROSION CONTROL PRODUCT (RECP)

HYDRO-MULCHING & HYDRO-SEEDING

COMPACTED GRANULAR TRENCH BACKFILL
- GLOSSARY OF COMMON ABBREVIATIONS:
1. FG = FORM GRADE ELEVATION; THE LOWEST INLET OPENING ELEVATION FOR A RISER OR STRUCTURE TO RECEIVE WATER FROM A POND OR CHANNEL

2. INV = THE LOWEST FLOWLINE ELEVATION OF A PIPE OR RISER TEE

3. TILE = CORRUGATED SINGLE-WALL HIGH DENSITY POLYETHYLENE PIPE

4. HDPE = HIGH DENSITY POLYETHYLENE CORRUGATED DUAL-WALL PIPE MEETING ASTM 2648-07

5. PPHP = POLYPROPYLENE HIGH PERFORMANCE CORRUGATED DUAL-WALL PIPE MEETING ASTM 2736-10 FOR 12-30" DIA. (i.e. ADS N-12HP OR APPROVED EQUAL)

6. RCP = REINFORCED CONCRETE PIPE

7. CMP = CORRUGATED METAL PIPE

8. FES = FLARED END SECTION

9. RIM = ELEVATION OF A MANHOLE LID OR HIGHEST EDGE OF A PLUNGE POOL

10. LF = LINEAL FEET

11. NP = NORMAL POOL ELEVATION.

12. HP = HIGH POINT ELEVATION

13. CL = CENTERLINE
- NOTE: THE LEGEND OF SYMBOLS AND LIST OF ABBREVIATIONS SHOWN ABOVE ARE GENERIC. NOT ALL SYMBOLS OR ABBREVIATIONS LISTED APPEAR ON THE ACCOMPANYING DRAWINGS FOR THIS PROJECT. SYMBOLS OR ABBREVIATIONS NOT LISTED HERE ARE SPECIFICALLY CALLED OUT AS NECESSARY.
- DESIGN BY: WJG

DRAWN BY: WJG

CHKD. BY: MLB

ISSUED: 08-14-2014

REVISED: 1-12-2015

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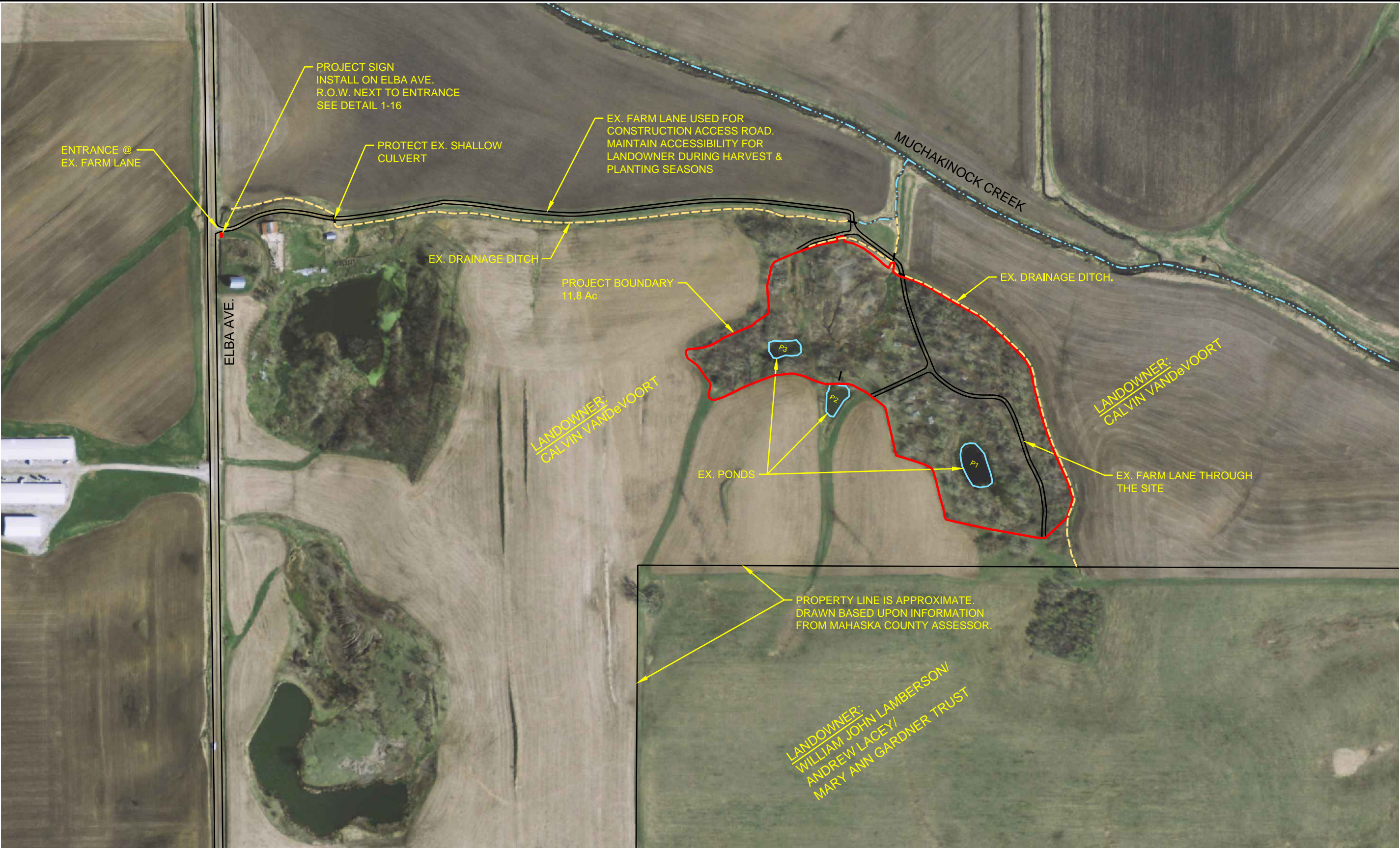
MEMMELAAR
AML RECLAMATION PROJECT

PROJECT NOTES &
ESTIMATED QUANTITIES

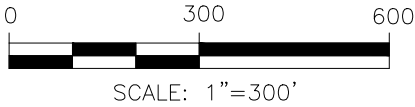
DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE
AND LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
502 E. 9th STREET, DES MOINES, IOWA 50319
(515)281-4246


SHEET

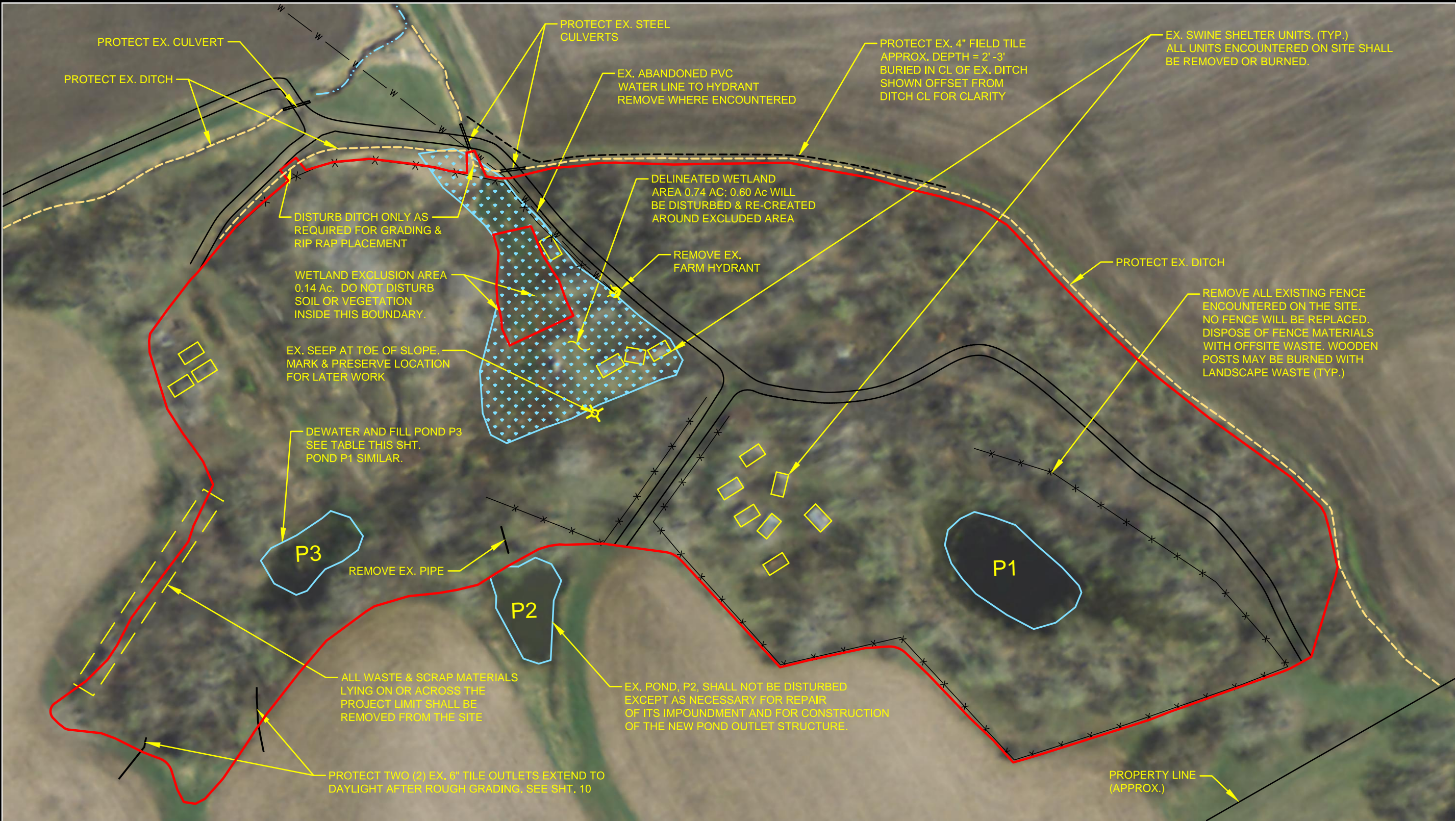
2 OF 21



- NOTES THIS SHEET:
1. THE SITE IS LOCATED A DISTANCE GREATER THAN ¼ MILE FROM THE CLOSEST INHABITED BUILDING -- THUS "NO-BURN" RADII ARE OMMITTED
 2. NO LOCAL SURVEY CONTROL HAS BEEN ESTABLISHED FOR THIS PROJECT.
 3. ALL TREES AND VEGETATION MUST BE REMOVED UP TO THE PROJECT BOUNDARY.
 4. TREES LOCATED ON THE PROJECT BOUNDARY MAY BE SPARED SUBJECT TO ENGINEER APPROVAL.
 5. THIS RECLAMATION PROJECT IS LOCATED WHOLLY ON ONE LANDOWNER'S PROPERTY.

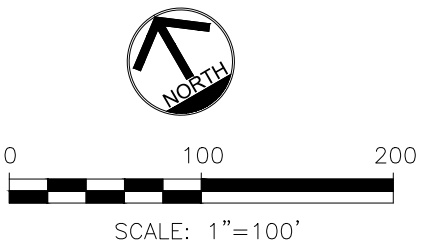


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<div>MEMMELAAR</div> <div>AML RECLAMATION PROJECT</div> <div>SITUATION PLAN</div> <div>NO-BURN RADII & SURVEY CONTROL</div>			<div><div><div>IOWA</div><div>DEPARTMENT OF</div><div>AGRICULTURE</div><div>AND LAND STEWARDSHIP</div></div><div></div></div> <div>DIVISION OF SOIL CONSERVATION</div> <div>IOWA DEPARTMENT OF AGRICULTURE</div> <div>AND LAND STEWARDSHIP</div> <div>HENRY A. WALLACE BUILDING</div> <div>502 E. 9th STREET, DES MOINES, IOWA 50319</div> <div>(515)281-4246</div>				REVISION:	DATE:	DESCRIPTION:
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- NOTES THIS SHEET:
1. SITE CONTAINS A VARIETY OF SCRAPPED EQUIPMENT AND CREOSOTE CONSTRUCTION MATERIALS DISTRIBUTED ACROSS THE SITE.
 2. REMOVE ALL SCRAPPED EQUIPMENT, CREOSOTE MATERIALS, AND OTHER WASTE FROM THE SITE. SCRAP IRON AND CREOSOTE MATERIALS MAY BE RECYCLED TO THE EXTENT PRACTICABLE.
 3. SWINE UNITS MAY BE BURNED WITH THE LANDSCAPE WASTE, BUT ASPHALT ROOFING MATERIALS, IF ENCOUNTERED, SHALL NOT BE BURNED. ALL UNBURNED BUILDING MATERIAL SHALL BE REMOVED FROM THE SITE.

EXISTING POND INFORMATION							
POND	pH	WATER SURFACE ELEV. (FT)	ESTIMATED WATER SURF. AREA (AC)	ESTIMATED WATER DEPTH (FT)	ESTIMATED MUCK DEPTH (FT)	EST. WATER VOLUME (GALLONS)	DEWATERED AND BACKFILLED?
P1	7.5	782	0.30	2	4	150,000	YES
P2	7.4	778	0.12	4	NOT MEAS.	120,000	LEFT "AS-IS"
P3	N/A	764	0.14	1	4	36,000	YES



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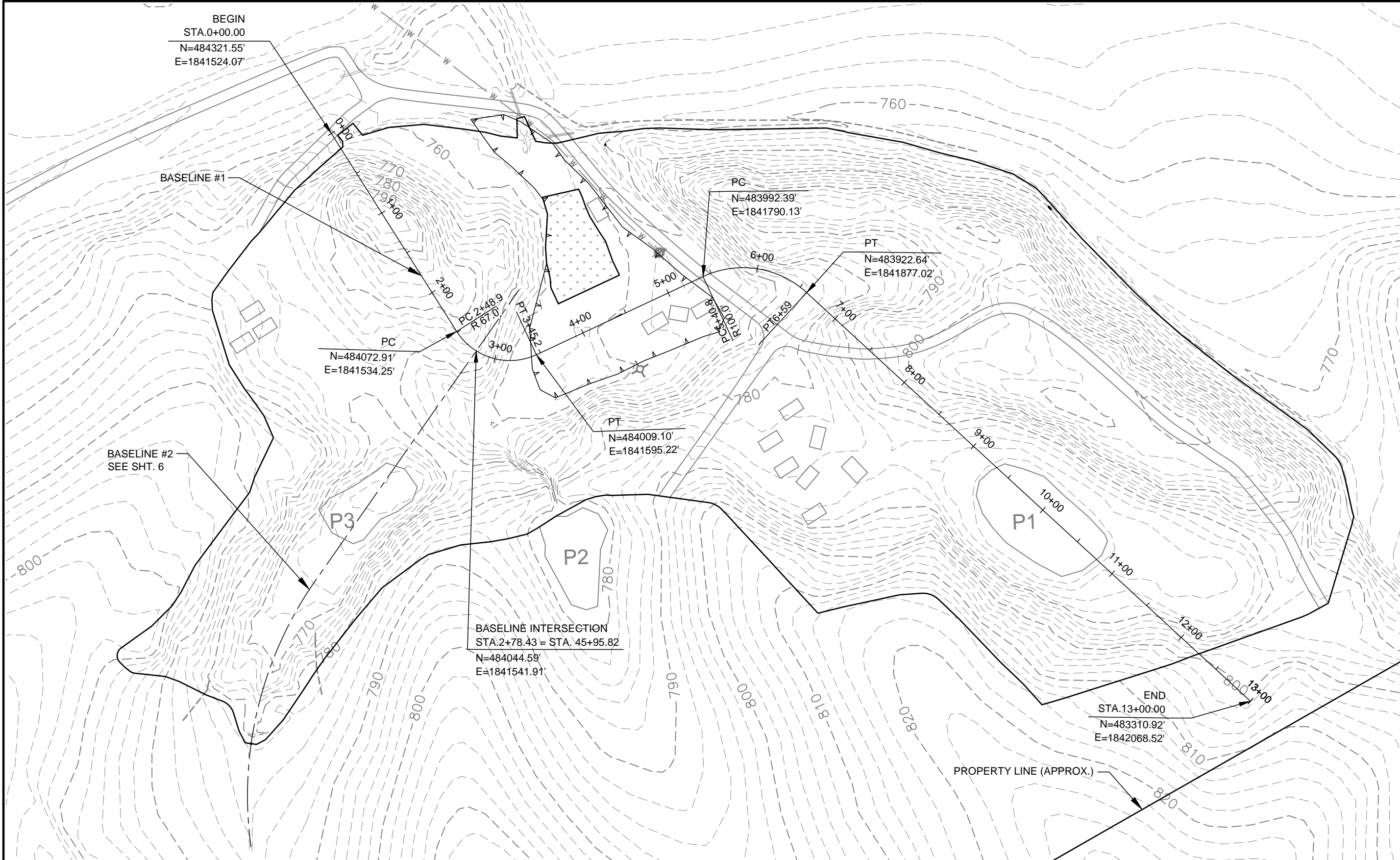


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MEMMELAAR
AML RECLAMATION PROJECT


CLEARING & SITE PREPARATION

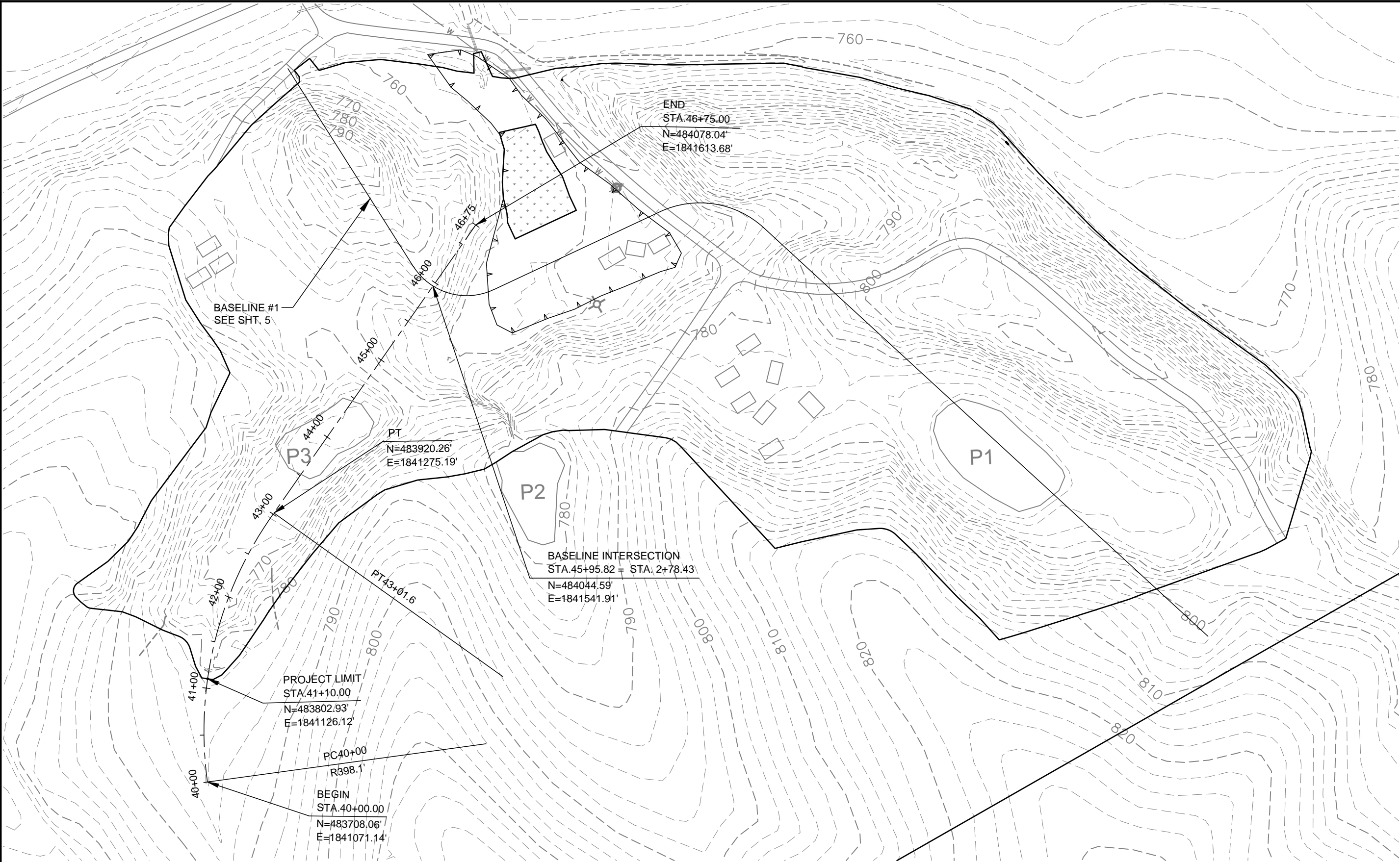
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4 OF 21



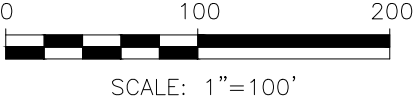
NOTES THIS SHEET:


- 1. NO LOCAL CONTROL POINTS HAVE BEEN ESTABLISHED FOR THIS PROJECT. SEE CONSTRUCTION SURVEYING NOTES 1-4 ON SHEET 2.
- 2. STATIONING FOR BASELINE #1 PROCEEDS FROM 0+00 TO 13+00 AS SHOWN ON THIS SHEET.
- 3. STATIONING SERIES FOR BASELINE #2 PROCEEDS FROM 40+00 TO 46+75 TO AS SHOWN ON SHEET 6.

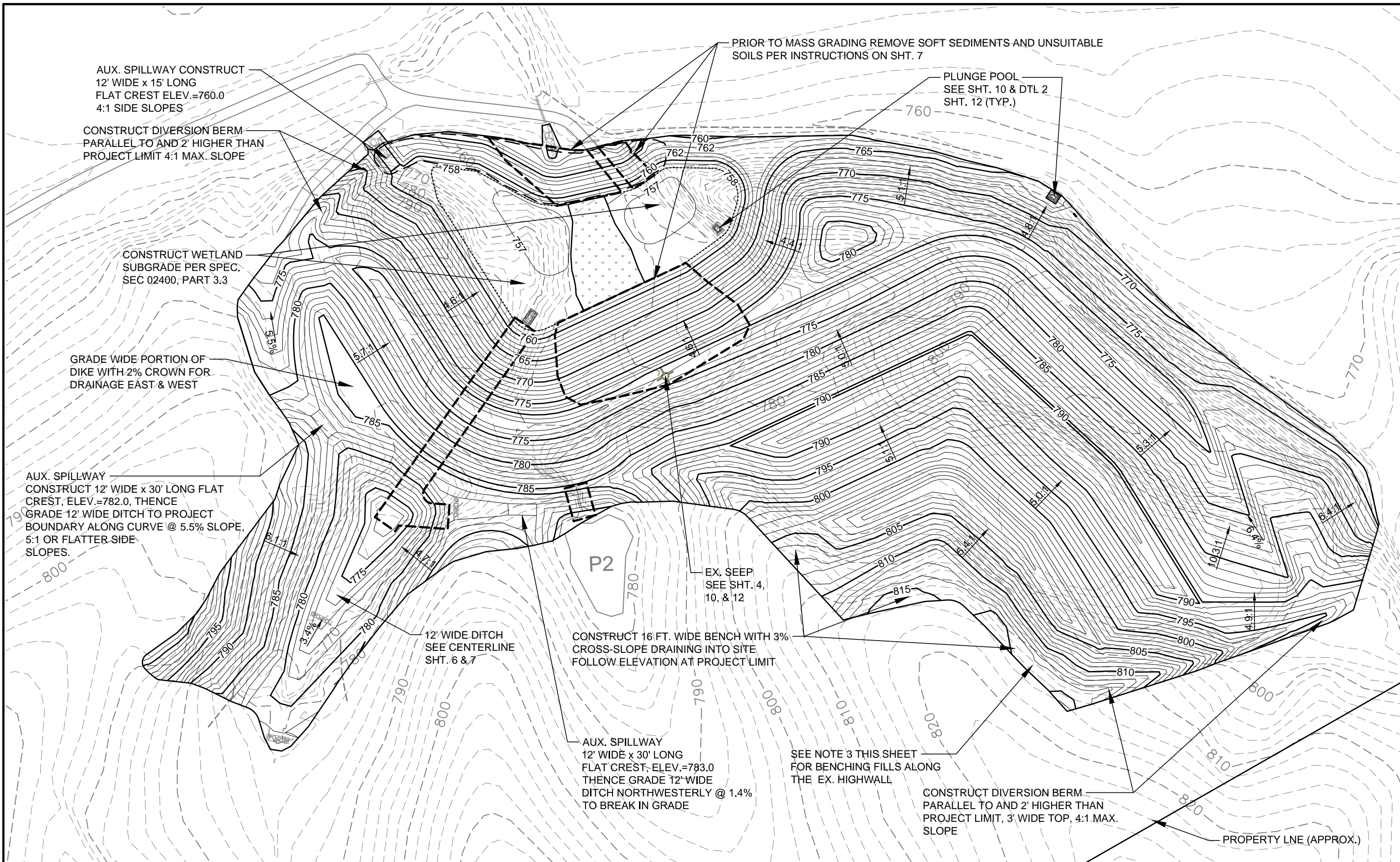
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<div>MEMMELAAR</div> <div>AML RECLAMATION PROJECT</div> <div>SURVEY BASELINE #1 DETAILS</div>			 <div>DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246</div>	REVISION:	DATE:	DESCRIPTION:
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SHEET 5 OF 21						



- NOTES THIS SHEET:
1. NO LOCAL CONTROL POINTS HAVE BEEN ESTABLISHED FOR THIS PROJECT. SEE CONSTRUCTION SURVEYING NOTES 1-4 ON SHEET 2.
 2. STATIONING FOR BASELINE #1 PROCEEDS FROM 0+00 TO 13+00 AS SHOWN ON SHEET 5.
 3. STATIONING FOR BASELINE #2 PROCEEDS FROM 40+00 TO 46+75 AS SHOWN ON THIS SHEET.



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MEMMELAAR AML RECLAMATION PROJECT SURVEY BASELINE #2 DETAILS			 DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246				1			
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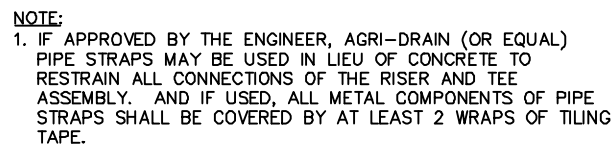


NOTES THIS SHEET:

1. PROPOSED CONTOUR LINES WITHIN THE PROJECT BOUNDARY ARE DRAWN AT 1-FOOT INTERVALS. CONTOUR LINES OUTSIDE THE PROJECT BOUNDARY ARE SHOWN AT 2-FOOT INTERVALS.
2. ALL CONTOURS ARE TO FINISHED GRADE, OVER-EXCAVATION REQ'D FOR RIP RAP IS NOT SHOWN AND IS INCIDENTAL TO PLACEMENT OF THAT MATERIAL.
3. BENCH ALL FILLS INTO THE HIGHWALL TO MAINTAIN HORIZONTAL LIFTS PER SECTION 2200, 3.9 B.

0 100 200
SCALE: 1"=100'

DESIGN BY: WJG		DRAWN BY: WJG	CHKD. BY: MLB	ISSUED: 08-14-2014	REVISED: 1-12-15	FILE: MEMMELAAR_AML.DWG	DESCRIPTION:		
<div>MEMMELAAR</div> <div>AML RECLAMATION PROJECT</div> <div>GRADING PLAN</div>			<div><div><div>IOWA</div><div>DEPARTMENT OF</div><div>AGRICULTURE</div><div>AND LAND STEWARDSHIP</div></div><div><div>DIVISION OF SOIL CONSERVATION</div><div>IOWA DEPARTMENT OF AGRICULTURE</div><div>AND LAND STEWARDSHIP</div><div>HENRY A. WALLACE BUILDING</div><div>502 E. 9th STREET, DES MOINES, IOWA 50319</div><div>(515)281-4246</div></div></div>				REVISION:	DATE:	DESCRIPTION:
							1	1-12-15	ADDED CALLOUTS & NOTE FOR BENCHING
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							4		
SHEET							8	OF	21



FLAT TOP WIDTH, SEE TABLE

OVERFILL SLOPE

OVERFILL DEPTH

SETTLED ELEVATION
H1,
(H2) VARIES

PROPOSED GRADE

CHANNEL ELEV.

CHANNEL WIDTH, SEE TABLE

TERRACE FLOWLINE OR
INTAKE LOCATION (SEE PLAN)

SEE SECTION DRAWINGS

SETTLED SLOPE (S:1)

DOWNHILL TOE

MINIMIZE COMPACTION
ON TOP 12"

TERRACE RIDGE
LOCATION STATION

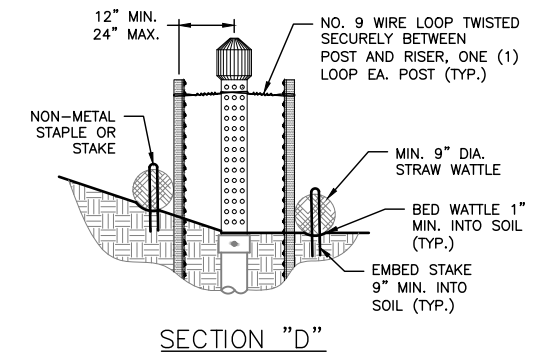
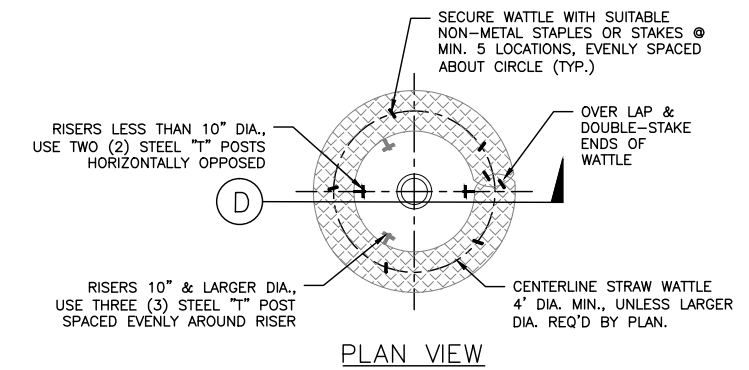
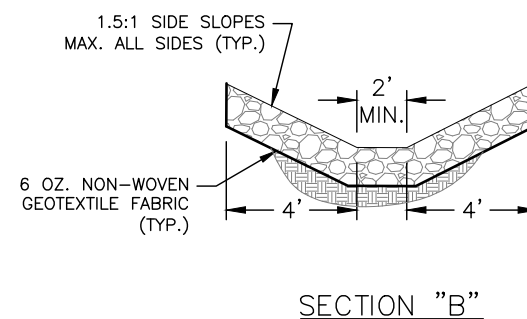
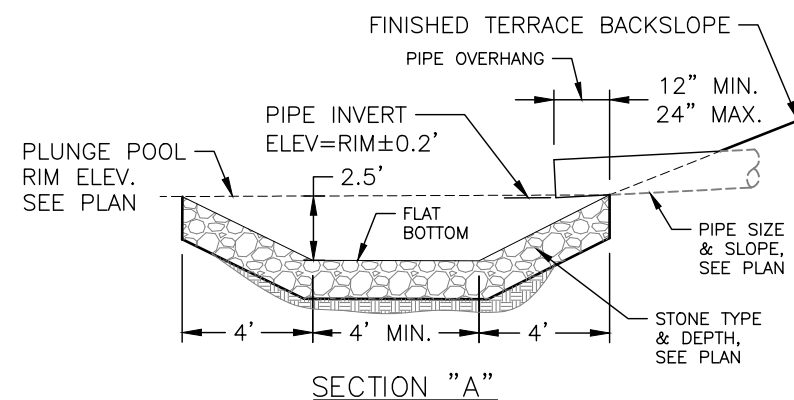
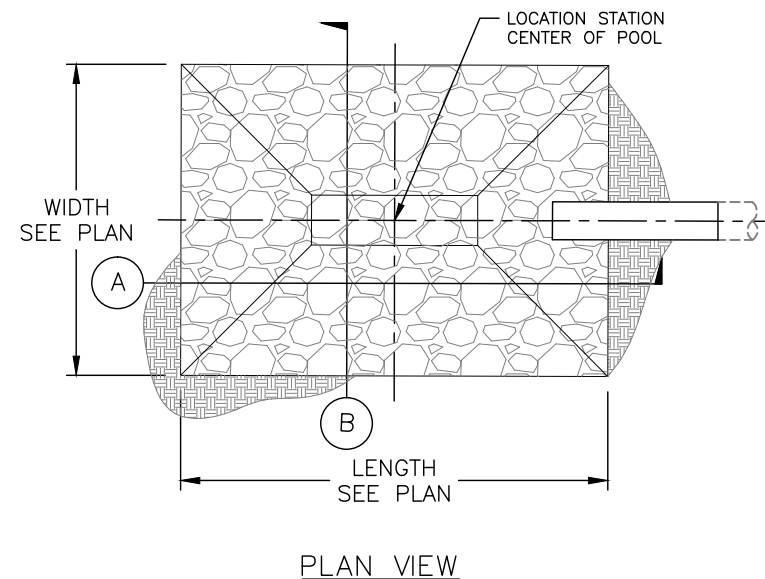
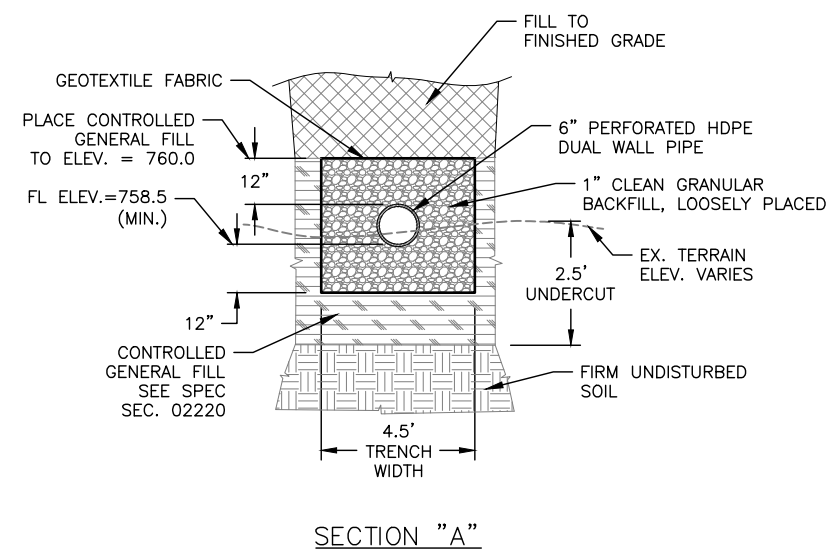
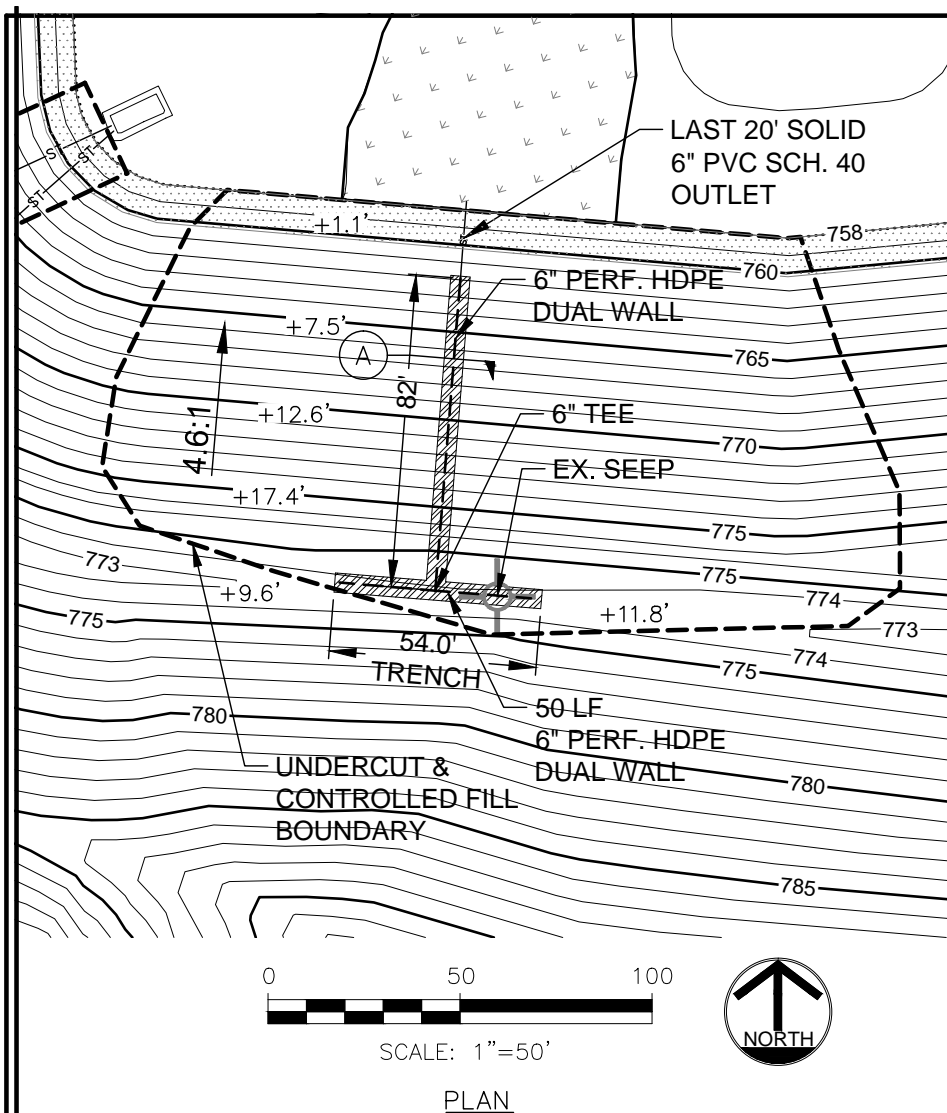
2 FILL TERRACE DETAIL
11 SCALE: NONE

[illegible]

1. TWO (2) STEEL FENCE POSTS SHALL BE INSTALLED ADJACENT TO AND ON OPPOSITE SIDES OF EACH TERRACE INTAKE RISER TO REINFORCE AGAINST OVERTURNING. TERRACE RISERS 10" AND LARGER SHALL BE REINFORCED WITH THREE (3) STEEL FENCE POSTS SPACED EVENLY AROUND THE RISER. FENCE POSTS SHALL BE WIRED TO THE INTAKE RISER WITH NO. 9 WIRE.
2. COST OF FENCE POSTS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF INSTALLING INTAKE RISER.
3. INSTALL PRESCRIBED LENGTH OF 9" DIA. STRAW WATTLE AROUND EACH INTAKE IN THE FORM OF A 4' DIA. CIRCLE UNLESS NOTED OTHERWISE ON PLAN SHEETS. STRAW WATTLE SHALL BE STAKED WITH A MIN. OF 5 STAKES SPACED EVENLY AROUND THE CIRCLE.
4. LAST 20 LF OF ALL PLASTIC PIPE OR TILING TO DAYLIGHT SHALL BE SCH. 40 PVC OR SDR 26 PVC, SUITABLE MANUFACTURED ADAPTORS SHALL BE USED TO JOIN CORRUGATED PLASTIC PIPE TO THE PVC OUTLET. THE JOINT BETWEEN THE CORRUGATED PIPE OR TILING AND THE PVC OUTLET SHALL BE RESTRAINED WITH CONCRETE OR AGRI-DRAIN (OR EQUAL) PIPE STRAPS.
5. ALL JOINTS BETWEEN RUNS OF CORRUGATED PLASTIC SINGLE-WALL TILING SHALL BE ENCASED IN CONCRETE WITHIN THE PIPE TRENCH.
6. ALL JOINTS OF DUAL-WALL HDPE OR PPH PIPE SHALL RESTRAINED WITH AGRI-DRAIN (OR EQUAL) PIPE STRAPS OR CONCRETE WHERE REQUIRED BY THE PLAN.
7. WHERE SACK-CRETE IS USED IT SHALL BE HYDRATED PRIOR TO BEING PLACED AROUND THE PIPE JOINT AND/OR RISER TEE.

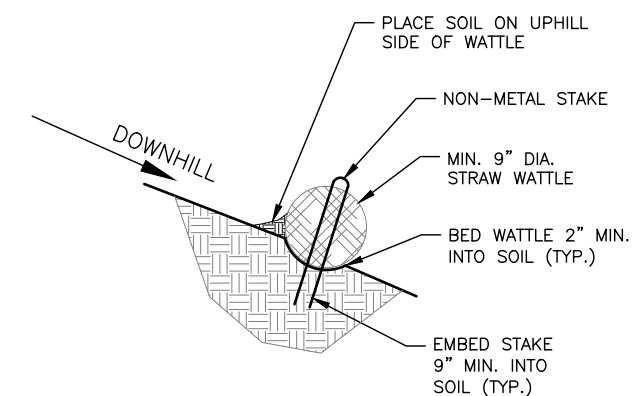
[illegible]


1. CHANNEL AND RIDGE ELEVATIONS ARE SHOWN RELATIVE TO THE LOW POINT ELEVATION OF THE TERRACE CHANNEL AT THE INTAKE RISER.
2. H1=HEIGHT FROM LOW POINT IN THE TERRACE CHANNEL AT THE INTAKE TO TOP OF THE SETTLED RIDGE.
3. H2=HEIGHT FROM HIGH POINT IN THE TERRACE CHANNEL AT THE ENDS TO TOP OF THE SETTLED RIDGE.
4. TERRACE RIDGES ARE UNIFORM (LEVEL) THROUGHOUT THE ENTIRE LENGTH.
5. RIDGE LENGTHS ARE MEASURED ALONG THE UPSTREAM EDGE OF THE RIDGE.
6. OVERFILL DEPTH IS A MINIMUM ADDITIONAL 12.5% OF H1 OR 6 INCHES, WHICHEVER IS GREATER UNLESS NOTED OTHERWISE.
7. CHANNEL LENGTHS ARE MEASURED ALONG THE TERRACE FLOWLINE SEE ADJOINING DETAIL.
8. THE FILL VOLUME IS THE ESTIMATED SETTLED VOLUME OF SOIL OF THE TERRACE CONSTRUCTED ABOVE THE FINISHED GRADE NOT INCLUDING OVERFILL.
9. ** VOLUME FOR TERRACE CONSTRUCTION IS INCLUDED IN THE OVERALL EARTHWORK QUANTITY.



NOTE:

1. FILTER SOCK MAY BE USED IN LIEU OF STRAW WATTLE. IF USED, SECURE FILTER SOCK IN PLACE PER MANUFACTURER'S RECOMMENDATION.
2. COST OF STEEL "T" POSTS ARE INCIDENTAL TO THE COST OF RISER INSTALLATION.



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<div>MEMMELAAR AML RECLAMATION PROJECT</div> <div>TYPICAL DETAILS</div>			<div><div><div><div>IOWA</div><div>DEPARTMENT OF</div><div>AGRICULTURE</div><div>AND LAND STEWARDSHIP</div></div></div><div>DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246</div></div>					REVISION:	DATE:	DESCRIPTION:
								1		
								2		
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SHEET

12 OF 21


$$\frac{1}{13}$$

A diagram of a square pipe seal flange. It features a central circular opening and three smaller circular inlet openings around its perimeter. Labels with arrows point to these features: 'INLET OPENING' (three times for the inlets), 'PIPE SEAL F.L. OUT' (for the top right outlet), and 'PIPE SEAL F.L. IN' (for the bottom right inlet).

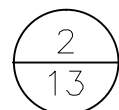



Diagram illustrating the components of a pipe seal assembly:

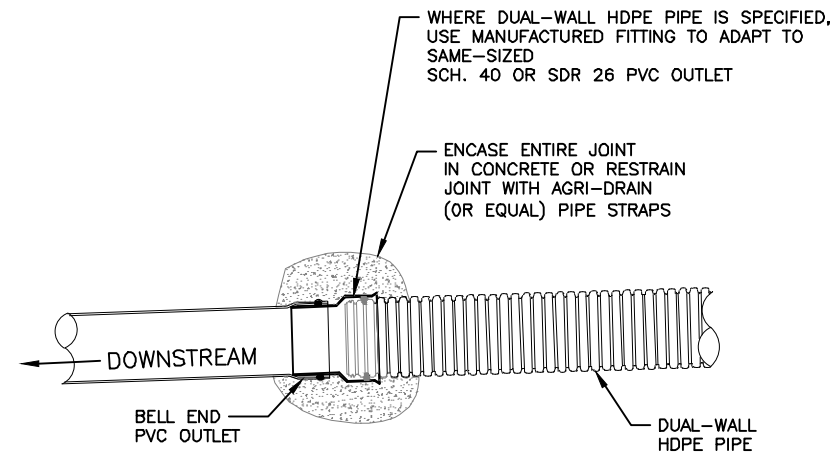
- PIPE SEAL F.L. OUT
- INLET OPENING
- INLET OPENING
- INLET OPENING



A diagram of a square pipe seal. It consists of a square outer frame with a smaller square inner frame, creating a square ring. In the center of this ring is a circle. Four arrows point to the corners of the square ring, each labeled "INLET OPENING". An arrow points to the top-right corner of the outer frame, labeled "PIPE SEAL F.L. OUT".



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<p>MEMMELAAR</p> <p>AML RECLAMATION PROJECT</p> <p>TYPICAL DETAILS</p>		 <p>DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP</p> <p>HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246</p>			
		REVISION:	DATE:	DESCRIPTION:	
		1	1-13-15	ADDED DETAIL TO DETAIL 1	
		2			
		3			
4					



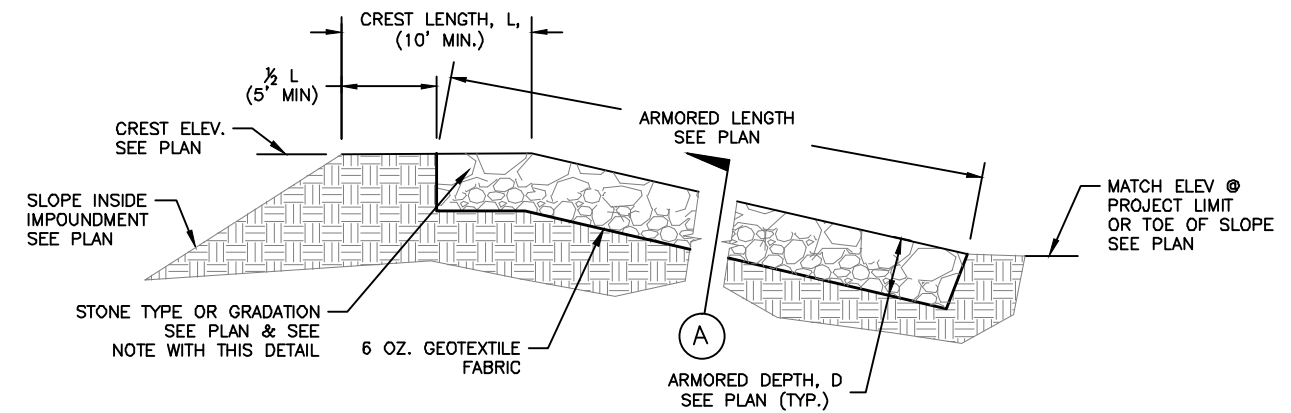
NOTES:

1. WHEN USING AGRI-DRAIN (OR SIMILAR) PIPE STRAPS, COVER METAL "D" RINGS WITH AT LEAST TWO (2) WRAPS OF AGRI-DRAIN PVC TILE TAPE AFTER STRAPS ARE INSTALLED ON THE PIPE. THIS IS TO PREVENT EXPOSURE OF THE METAL TO ACID CORROSION.
2. WHEN USING FERNCO® OR SIMILAR COUPLERS TO CONNECT CORRUGATED PIPE TO THE PLAIN END OF SMOOTH PVC OUTLET PIPE, AND WHEN USING AGRI-DRAIN PIPE STRAPS, SECURE PIPE STRAP TO THE PVC PIPE WITH TWO (2) STAINLESS STEEL $\frac{1}{4}$ " THRU-BOLTS AND WASHERS TO PREVENT SLIPPAGE OF THE STRAP FROM THE PIPE. SEAT STRAPS UNDER THE BOLT WASHERS, BUT DO NOT PUNCTURE THE STRAP WITH THE FASTENERS.
3. WHEN 12" OR LARGER PIPE IS SPECIFIED, CORRUGATED POLYPROPYLENE PIPE, I.E. ADS N12-HP (OR EQUAL), MAY BE USED IN LIEU OF SCH 40 OR SDR 26 SUBJECT TO ENGINEER'S APPROVAL FOR THE INTENDED LOCATION.

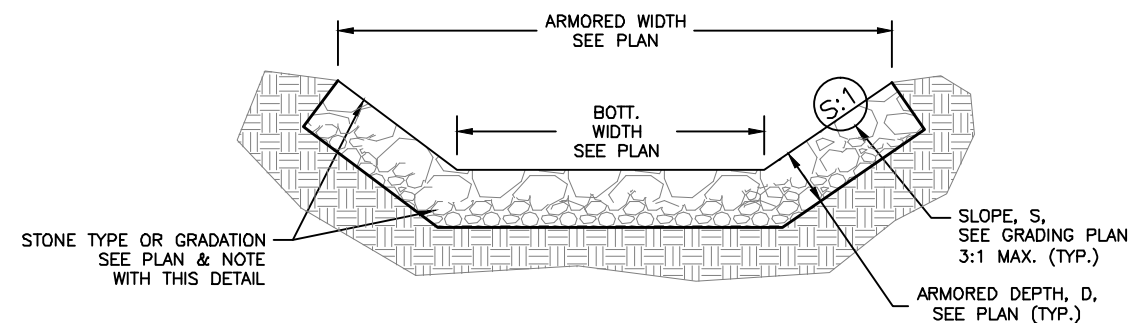
DUAL-WALL PIPE TO PVC OUTLET DETAIL

SCALE: NONE

1
14



PROFILE



CROSS-SECTION "A"

NOTES:

1. THIS DETAIL ILLUSTRATES RIPRAP INTERSPERSED WITH EROSION STONE TO PARTIALLY CHOKE THE VOIDS IN THE RIPRAP. SEE PLAN FOR TYPE OF STONE OR GRADATION TO BE USED FOR THE ARMOR IN EACH APPLICATION.
2. INTERSPERSE RIPRAP WITH EROSION STONE: PLACE EROSION STONE IN FIRST 6"-8" LIFT AT BOTTOM OF EXCAVATION, THEN PLACE APPROXIMATELY 12" OF RIPRAP. "SPRINKLE" EROSION STONE INTO VOIDS OF RIPRAP PRIOR TO PLACING ADDITIONAL RIPRAP. REPEAT UNTIL SPECIFIED DEPTH OF ARMOR IS PLACED.

AUXILIARY SPILLWAY WITH STONE ARMOR PROTECTION

SCALE: NONE

2
14

DESCRIPTION:

DATE:

REVISION:

1

2

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4

FILE: MEMMELAAR_AML.DWG

REVISED:

NONE

ISSUED:

08-14-2014

CHKD. BY:

MLB

DRAWN BY:

WJG

DESIGN BY: WJG

DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE
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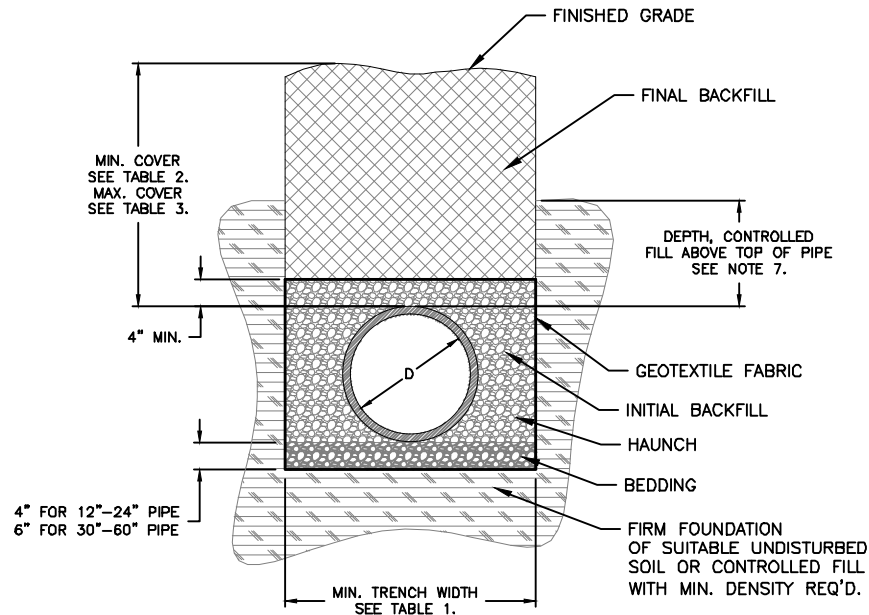
MEMMELAAR
AML RECLAMATION PROJECT

TYPICAL DETAILS

SHEET

14 OF 21

CORRUGATED POLYPROPYLENE HIGH PERFORMANCE PIPE
TRENCH INSTALLATION DETAIL



NOTES:

- ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION, WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321 . CLASS IVB MATERIALS (MH, CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
- MEASURES SHALL BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
- FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
- BEDDING:** SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 12"-24" (300mm-600mm) DIAMETER PIPE; 6" (150mm) FOR 30"-60" (750mm-900mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
- INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE CLASS I, II, OR III, AS SPECIFIED BY THE ENGINEER IN THE BACKFILL ENVELOPE EXTENDING TO 4" ABOVE THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. SEE ALSO NOTE 8 BELOW. NOTE THAT CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT. CLASS IV MATERIAL MAY ONLY BE USED WITH THE APPROVAL OF A SOIL EXPERT.
- MINIMUM COVER :** MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS; CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" (300mm) UP TO 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 60" (1500mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. CLASS IV MATERIALS ARE NOT RECOMMENDED AS BACKFILL FOR TRAFFIC APPLICATION WITH LESS THAN 72" (1830mm) OF COVER MEASURED FROM TOP OF PIPE TO TOP OF SURFACE.
- CONTROLLED FILL:** WHEN PIPE IS TO BE INSTALLED IN CONTROLLED FILL WITH MINIMUM DENSITY REQUIREMENTS, EXTEND CONTROLLED FILL ZONE TO A MINIMUM 2' ABOVE TOP OF PIPE PRIOR TO EXCAVATION OF THE TRENCH UNLESS OTHER OTHERWISE APPROVED BY THE ENGINEER.
- WHEN THE INITIAL BACKFILL IS SPECIFIED AS CLASS I OR II FOR A SPECIFIC ZONE ALONG THE PIPE'S LENGTH, THE ZONE SHALL NOT BEGIN OR END AT LOCATIONS LESS THAN FOUR (4) FEET FROM A BELL & SPIGOT PIPE COUPLING. WHEN THE PLANNED LOCATION OF THE BACKFILLED ENVELOPE BEGINS OR ENDS WITHIN FOUR (4) FEET OF A COUPLING, THE PIPE ENVELOPE SHALL BE EXTENDED A MINIMUM FOUR (4) FEET BEYOND THE JOINT TOWARD THE DIRECTION OF SHALLOWER FILL ABOVE THE PIPE.

TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM., D	MIN TRENCH WIDTH
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
48"	80"
60"	96"

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON
VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75 TON AXLE LOAD) *
12" - 48"	12"	48"
60"	24"	60"

* VEHICLES IN EXCESS OF 75 TON MAY REQUIRE ADDITIONAL COVER

TABLE 3, MAXIMUM COVER FOR ADS N-12 HP PIPE, ft

PIPE DIA	CLASS I COMPACTED	CLASS II			CLASS III			CLASS IV
		95%	90%	85%	95%	90%	85%	
12"	40	28	21	16	21	17	15	14
15"	42	29	22	17	22	17	16	15
18"	37	26	19	14	20	15	14	13
24"	32	23	17	13	17	13	12	11
30"	32	23	17	13	18	14	12	12
36"	29	21	15	11	16	12	11	10
48"	24	18	14	10	14	11	10	9

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
HEIGHT OF WATER (H_w) = CROWN +1',
UNIT WEIGHT OF SOIL (γ_s) = 120 PCF

SOURCE: ADS

1
15
GRANULAR BACKFILL DETAIL
FOR PPHP PIPE
SCALE: NONE

FILE: MEMMELAAR_AML.DWG

REVISION: 1
DATE: 1-13-15
DESCRIPTION: ADDED 'ADS' AS SOURCE OF DETAIL

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4

REVISION: NONE

08-14-2014

ISSUED: 08-14-2014

CHKD BY: MLB

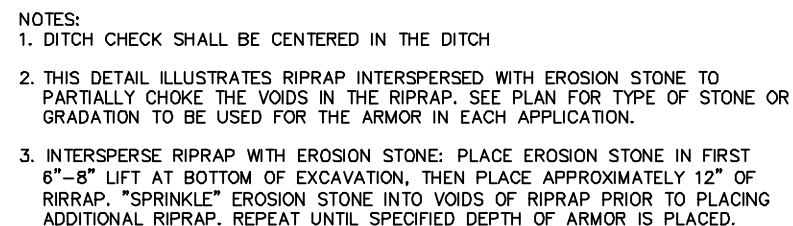
DRAWN BY: WJG

DESIGN BY: WJG

DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE
AND LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
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AML RECLAMATION PROJECT
TYPICAL DETAILS

SHEET
15 OF 21



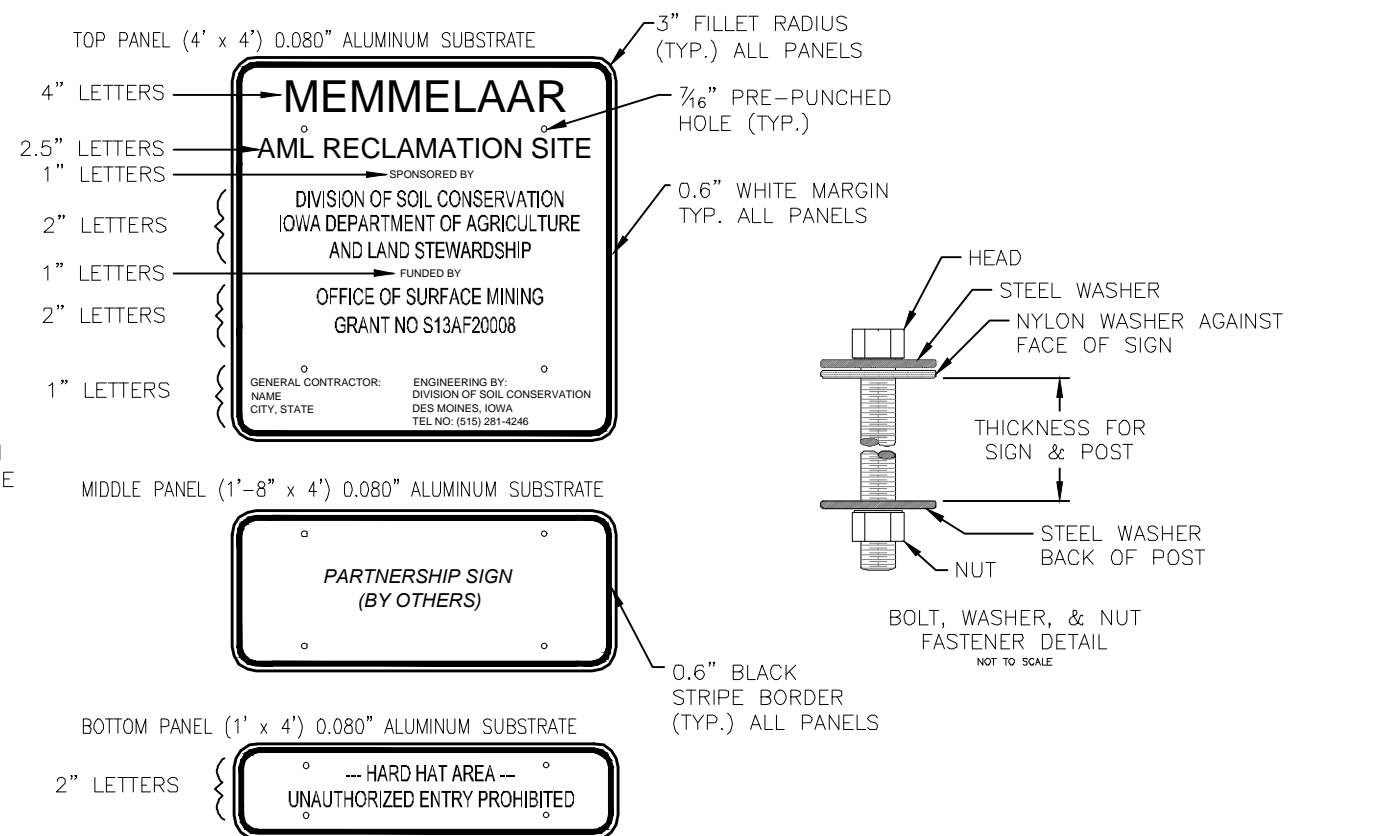
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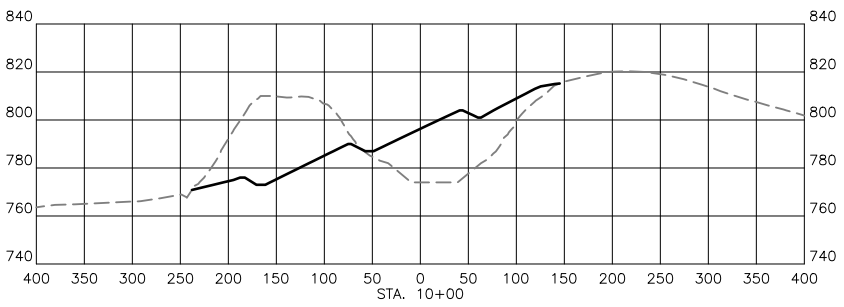
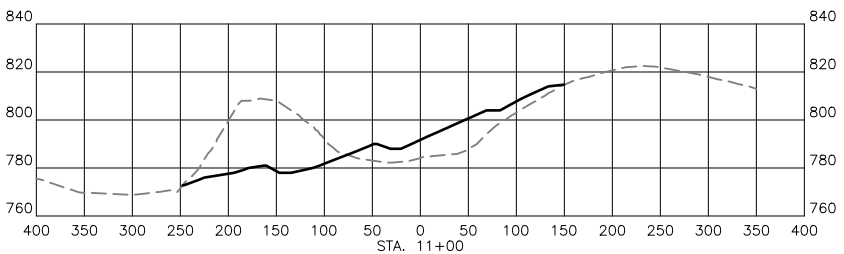
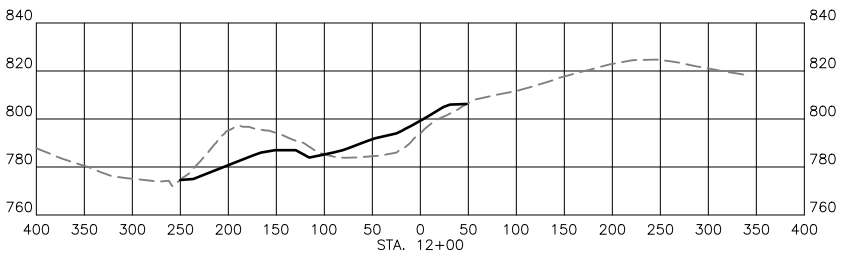
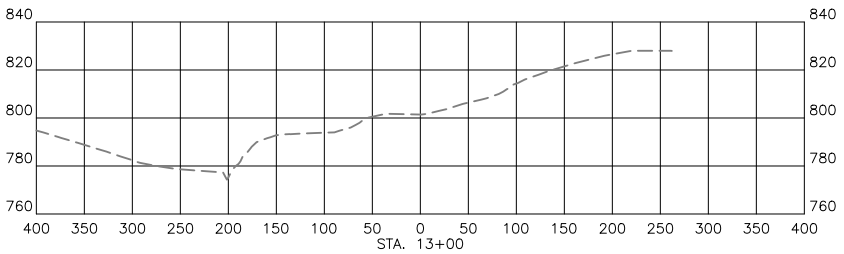
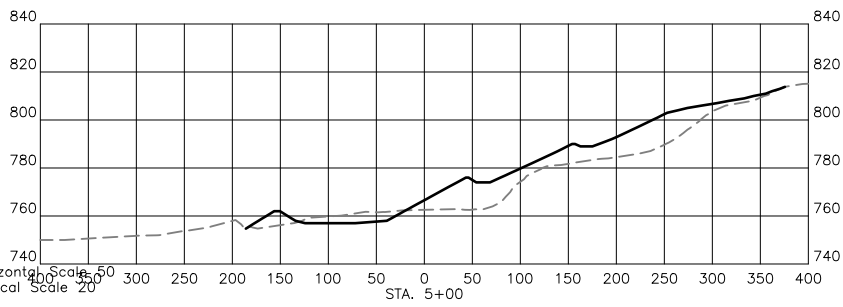
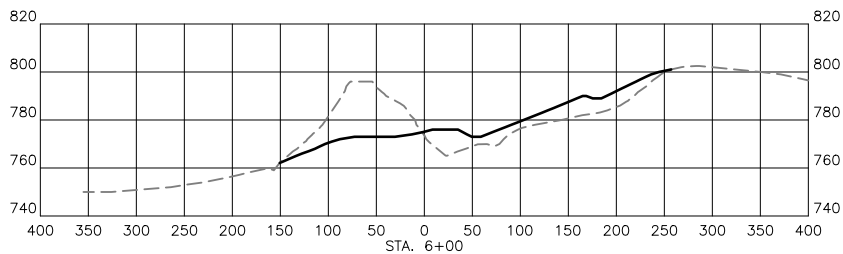
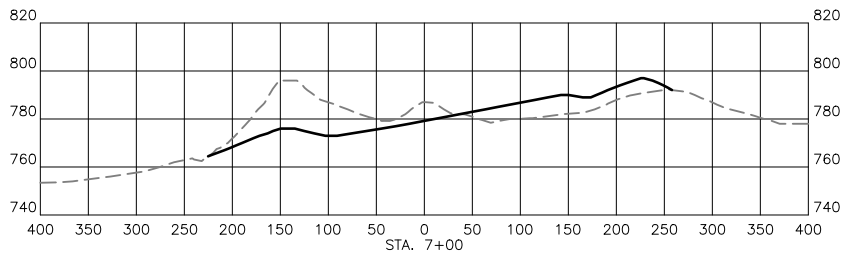
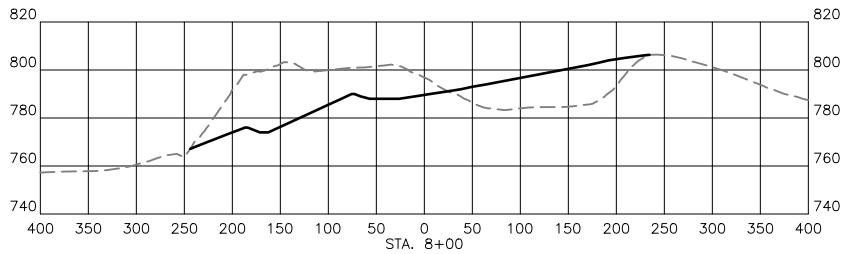
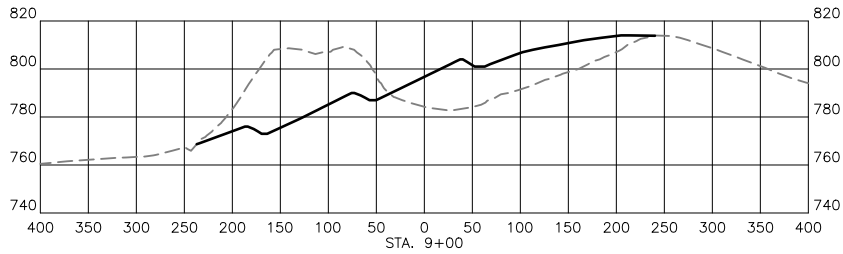
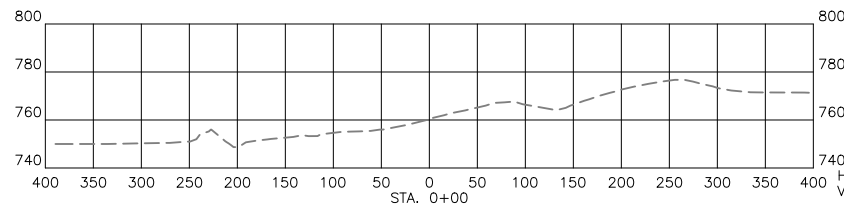
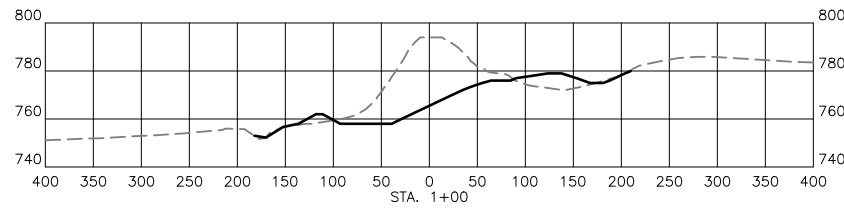
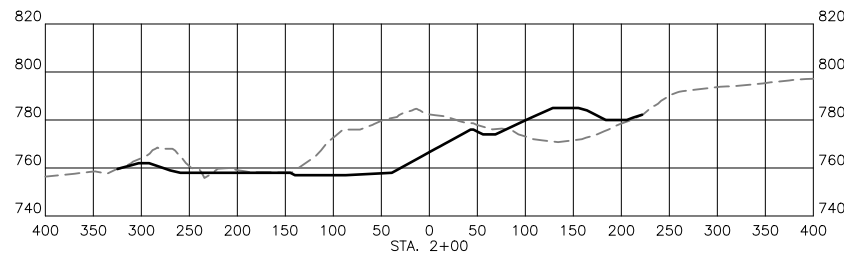
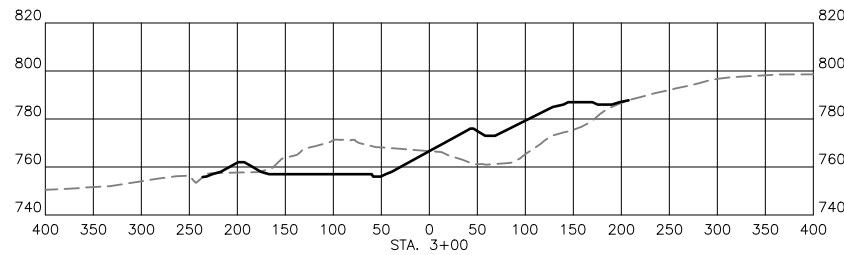
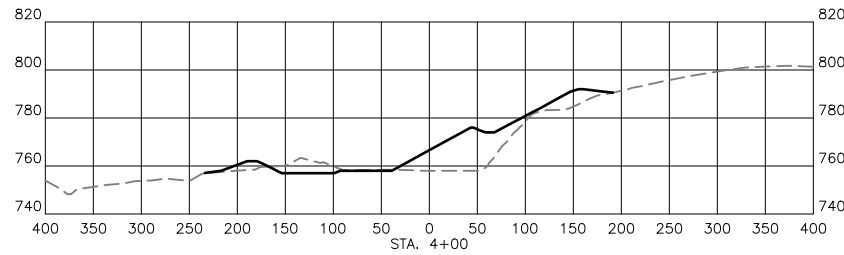
1. UNROLL MAT LONGITUDINALLY WITH THE SLOPE UNLESS OTHERWISE INDICATED ON THE PLAN OR AS SPECIFIED IN FOLLOWING NOTE
2. WHEN SPECIFIED RECP COVERAGE WIDTH EXCEEDS AVAILABLE ROLL WIDTH, UNROLL MAT PERPENDICULAR TO FLOW AS DESCRIBED IN SPECIFICATION SECTION 02120 3.3 K.

SCALE: NONE


$$\frac{2}{16}$$

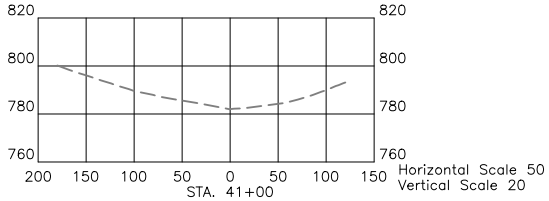
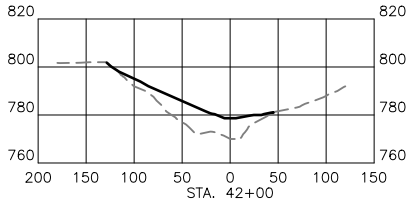
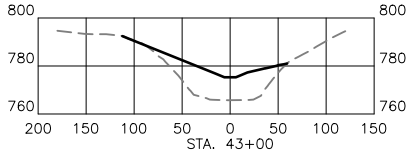
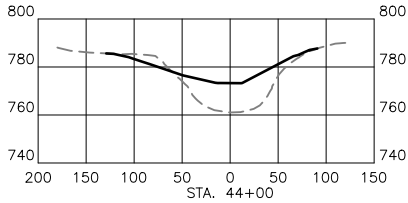
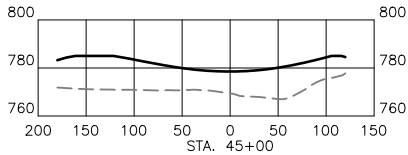



1. DIVISION WILL FURNISH TOP AND BOTTOM SIGN PANELS. MIDDLE PANEL PROVIDED BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSTS, HARDWARE, AND INSTALLATION FOR ALL PANELS.
2. ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSONS WATER SEAL OR EQUAL MEETING ASTM D-4446-08.
3. ALL STEEL HARDWARE PIECES SHALL BE GALVANIZED OR RUST RESISTANT.
4. NYLON AND STEEL WASHERS SHALL BE USED AS SHOWN ON THE BOLT, WASHER, NUT FASTENER DETAIL ABOVE.
5. CLEAR UTILITIES WITH IOWA ONE-CALL (800) 292-8989 BEFORE EXCAVATING FOR POSTS.
6. SECURE ENGINEERS APPROVAL FOR SIGN LOCATION BEFORE INSTALLATION.
7. COSTS FOR POSTS, HARDWARE, WOOD SEALANT AND SIGN INSTALLATION SHALL BE INCIDENTAL TO MOBILIZATION.
8. CONTRACTOR SHALL INSTALL SIGN POSTS USING A PLYWOOD OR OTHER SUITABLE TEMPLATE TO MAINTAIN ACCURATE POST SPACING AND ALIGNMENT DURING BACKFILLING OF THE POST HOLES. TO AVOID BENDING OF THE SIGN PANELS, POSTS SHALL NOT BE INSTALLED OR BACKFILLED WITH SIGN PANELS ATTACHED.
9. ONE (1) PROJECT SIGN IS REQUIRED, LOCATED AS SHOWN ON PLANS.



Horizontal Scale: 50
Vertical Scale: 20

DESIGN BY: WJG		DRAWN BY: WJG	CHKD. BY: MLB		ISSUED: 08-14-2014	REVISED: 00-00-00	FILE: MEMMELAAR_AML.DWG			
MEMMELAAR AML RECLAMATION PROJECT BASELINE #1 CROSS-SECTIONS STA. 0+00 TO STA. 13+00			<div><p>DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246</p></div>					REVISION:	DATE:	DESCRIPTION:
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SHEET 18 OF 21										



DESIGN BY: WJG		DRAWN BY: WJG	CHKD. BY: MLB	ISSUED: 08-14-2014	REVISED: 00-00-00	FILE: MEMMELAAR_AML.DWG	
MEMMELAAR AML RECLAMATION PROJECT BASELINE #2 CROSS-SECTIONS STA. 41+00 TO STA. 44+00			DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246		REVISION:	DATE:	DESCRIPTION:
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					3		
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STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SITE INFORMATION:

- 1. SITE IS LOCATED IN SW ¼ SECTION 01 TOWNSHIP 75 NORTH RANGE 17 WEST, MAHASKA COUNTY, IOWA.
- 2. THIS SWPPP COVERS THE RECLAMATION OF APPROXIMATELY 12 ACRES OF STRIP MINED LAND.
- 3. THE PREDOMINATE SOIL TYPES ARE: MINE SPOIL (502)
- 4. RUNOFF FROM THE CONSTRUCTION AREA WILL FLOW INTO AN UNNAMED TRIBUTARY TO MUCHAKINOCK CREEK.
- 5. THE AVERAGE NRCS RUNOFF CURVE NUMBER FOR THIS LAND AFTER PERMANENT VEGETATION IS ESTABLISHED IS ESTIMATED TO BE 74. SOILS ON THIS SITE ARE EXPECTED TO BE IN THE "C" HYDROLOGIC SOIL GROUP.

GENERAL:

- 1. THIS SHEET IS INCLUDED IN THE PLANS TO SUMMARIZE THE SWPPP. PARTICULAR SWPPP INFORMATION CAN BE FOUND IN THE SWPPP BOOK FOR THE PROJECT AND ON THE DRAWING(S) SHOWING LOCATIONS OF THE BEST MANAGEMENT PRACTICES (BMPs).
- 2. THIS PROJECT WILL BE COVERED BY NPDES GENERAL PERMIT NO. 2 WHICH REGULATES STORMWATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR CONSTRUCTION ACTIVITIES.
- 3. THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) BOOK PROVIDED BY THE ENGINEER SHALL BE KEPT ON SITE IN A WEATHER-PROOF ENCLOSURE, LIKE A MAILBOX OR SIMILAR CONTAINER PROVIDED BY THE CONTRACTOR. THE ENCLOSURE MAY BE LOCKED, BUT THE PLAN SHALL BE ACCESSIBLE TO THE ENGINEER OR DIVISION PERSONNEL AT ALL TIMES. THE SWPPP BOOK MUST BE MADE AVAILABLE WITHIN THREE (3) HOURS OF A REQUEST FROM REGULATORY PERSONNEL. A SIGN OR NOTICE POSTED BY THE CONTRACTOR SHALL INDICATE THE BOOK'S LOCATION ON SITE.
- 4. THE SWPPP BOOK KEPT ON SITE SHALL CONTAIN:
 - A) A COPY OF THE PERMIT AUTHORIZATION AND THE SWPPP DOCUMENT
 - B) SIGNED CONTRACTOR AND SUB-CONTRACTOR CERTIFICATION STATEMENTS
 - C) ANTICIPATED SEQUENCE OF CONSTRUCTION EVENTS
 - D) COMPLETED INSPECTION REPORTS
 - E) MODIFICATIONS AND REPAIR DOCUMENTATION
- 4. THE PRIME CONTRACTOR AND ALL ITS SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER WHICH MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE CONSTRUCTION SITE. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION AND COMPLIANCE OF THE SWPPP FOR THE ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH ALL OF ITS SUB-CONTRACTORS.
- 5. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE SWPPP, THE CONTRACT DRAWINGS, AND SECTION Q2120 OF THE PROJECT SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THESE REQUIREMENTS AND WATER POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF OTHER FEDERAL, STATE OR LOCAL AGENCIES, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.
- 6. CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR THE INSTALLATION OF ALL BMPs IDENTIFIED IN THE SWPPP.

EROSION AND SEDIMENT CONTROLS (GENERAL):

- 1. GRANULAR SURFACING SHALL BE INSTALLED AND MAINTAINED AT THE ENTRANCE INTO THE SITE AND ANY IDENTIFIED PARKING AREAS TO CONTROL MUD FROM BEING TRACKED FROM THE SITE. TRACKING OF SEDIMENTS OFF-SITE WILL BE REDUCED BY AVOIDING VEHICLE TRAFFIC ACROSS WET SURFACE SOILS. IF GRANULAR SURFACING AT THE SITE ENTRANCE IS DOES NOT EFFECTIVELY PREVENT TRACKING OF MUD FROM THE SITE, THEN VEHICLE TIRES SHALL BE MANUALLY CLEANED TO THE EXTENT PRACTICABLE. CONTRACTOR SHALL REMOVE TRACKED MUD AND SOIL FROM ADJOINING ROADWAYS.
- 2. WATER SHALL BE APPLIED TO HAUL ROADS AND OTHER DISTURBED EARTHEN SURFACES AS NECESSARY TO CONTROL DUST THROUGHOUT THE CONTRACT PERIOD.
- 3. WATER PUMPED DURING CONSTRUCTION OPERATIONS SHALL BE HANDLED IN A PROPER MANNER. EROSION AND SCOUR SHALL BE PREVENTED AT POINTS WHERE THE PUMP(S) DISCHARGE. LEVEL SPREADERS, RIP-RAP, AND/OR OTHER ENERGY ABSORBING DEVICES OR APPROPRIATE BMPs SHALL BE USED.
- 4. EXISTING VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED.
- 5. WHERE INDICATED ON DRAWINGS, SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED AT OR ALONG THE PERIMETER OF THE CONSTRUCTION AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITY.
- 6. RISERS, INLETS, INTAKES, AND OTHER SUCH WATER-CONVEYING STRUCTURES SHALL BE PROTECTED WITH SILT FENCES. STRAW WATTLES, OR FILTER SOCK AT THE TIME OF THEIR INITIAL INSTALLATION.
- 7. IN AREAS WHERE THE PRESENCE OF SILT FENCE, FILTER SOCK OR STRAW WATTLE WILL INTERFERE WITH CONSTRUCTION ACTIVITIES, DIVERSION DITCHES AND TEMPORARY SEDIMENT TRAPS SHALL BE UTILIZED UNTIL THE SILT FENCE OR OTHER PRACTICES CAN BE INSTALLED.
- 8. LOCATIONS AND QUANTITIES OF BMPs SHOWN ON THE DRAWINGS ARE APPROXIMATE. ACTUAL LOCATIONS OR QUANTITIES ARE TO BE DETERMINED IN THE FIELD WITH THE APPROVAL OF THE DIVISION OR THE THE PROJECT ENGINEER.
- 9. AS THE WORK PROGRESSES, ADDITIONAL EROSION CONTROL MEASURES DEEMED NECESSARY, AS DETERMINED BY THE DIVISION OR ENGINEER AFTER INVESTIGATION, SHALL BE FURNISHED, INSTALLED AND MAINTAINED BY THE CONTRACTOR.
- 10. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA FOR AT LEAST TWENTY-ONE (21) DAYS, THE AREA SHALL BE STABILIZED AS SOON AS PRACTICABLE AND WITHIN FOURTEEN (14) DAYS FOLLOWING THE LAST DISTURBANCE (UNLESS THE GROUND IS FROZEN OR SNOW COVERED) BY SURFACE ROUGHENING, TEMPORARY SEEDING, OR OTHER APPROVED METHOD.
- 11. EROSION CONTROL MEASURES BY THE CONTRACTOR SHALL CONTINUE UNTIL VEGETATIVE GROUND COVER IS ESTABLISHED. AND ACCEPTED BY THE DIVISION.
- 12. ALL AREAS DISTURBED BEYOND CONSTRUCTION LIMITS SHOWN ON THIS PLAN MUST BE SEEDED AND STABILIZED. THE SEED MIXTURE USED SHOULD INCLUDE SPECIES SIMILAR TO AND COMPATIBLE WITH THE SURROUNDING VEGETATION.

SITE SPECIFIC EROSION AND SEDIMENT CONTROLS:

- 1. ALONG EAST SIDE OF PROJECT, EXISTING DITCH SHALL BE PROTECTED FROM SETTLEMENT. WITHIN 14 DAYS FOLLOWING CLEARING INSTALL SILT FENCE ALONG AND JUST OUTSIDE OF THE PROJECT BOUNDARY. SOME INITIAL GRADING MAY BE REQUIRED TO CREATE A BENCH IN THE SLOPE ALONG THE BOUNDARY TO ALLOW ACCESS FOR EQUIPMENT.
- 2. 12" DIA. FILTER SOCK MUST BE INSTALLED AROUND THE EXCLUDED PORTION OF THE WETLAND WITHIN 10 DAYS FOLLOWING THE START OF GRADING OPERATIONS.
- 3. 12" DIA. FILTER SOCK SHALL BE INSTALLED ALONG THE PERIMETER OF THE CONSTRUCTED WETLAND WITHIN 14 DAYS FOLLOWING COMPLETION OF WETLAND GRADING AND TREATMENT.
- 4. SEE SWPPP BMP DRAWING ON FOLLOWING SHEET FOR ADDITIONAL PROJECT SPECIFIC PRACTICES.

OTHER POLLUTION CONTROLS:

- 1. THE CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION SITE FREE OF ALL WASTES INCLUDING LITTER, USED PARTS, USED OIL AND CONTAINERS, TIRES, AND ANY OTHER WASTES GENERATED BY CONSTRUCTION ACTIVITIES. SANITARY WASTE GENERATED ON SITE SHALL BE TREATED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS. CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND WASTES SHALL ALSO COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
- 2. CONCRETE WASHOUT RESIDUE SHOULD BE CONTAINED AND HAULED OFF SITE ONCE IT HARDENS. AREAS WHERE CONCRETE WASHOUT OCCURS SHALL BE FILLED AND STABILIZED.

TOPSOIL PRESERVATION:


THE SITE IS AN ABANDONED COAL MINE RECLAMATION PROJECT; NO TOPSOIL EXISTS PRIOR TO RECLAMATION-RELATED CONSTRUCTION ACTIVITIES. THEREFORE, THE TOPSOIL PRESERVATION REQUIREMENT WILL NOT BE MET. THE SITE CONSISTS OF MINE SPOIL MATERIAL CLASSIFIED AS MINE PITS AND DUMPS - SOIL TYPE 502 ON USDA SOIL SURVEY MAPS. AFTER FINAL GRADE IS ACHIEVED, AGRICULTURAL LIME WILL BE APPLIED AT A RATE TO BE DETERMINED BY SOIL TESTS. THE AGRICULTURAL LIME, ALONG WITH 5 TONS OF MULCH WILL BE INCORPORATED INTO THE UPPER ONE (1) FOOT OF THE MINE SPOIL TO PRODUCE A GROWING MEDIUM AS OUTLINED IN PROJECT SPECIFICATION Q2400. AFTER A PERIOD OF TIME TO ALLOW FOR NEUTRALIZATION AND MULCH DECOMPOSITION, THE SITE WILL BE PREPARED FOR SEEDING. AGRICULTURAL LIME, FERTILIZER, SEED AND CRIMPED MULCH WILL BE APPLIED AS OUTLINED IN PROJECT SPECIFICATION Q2700.

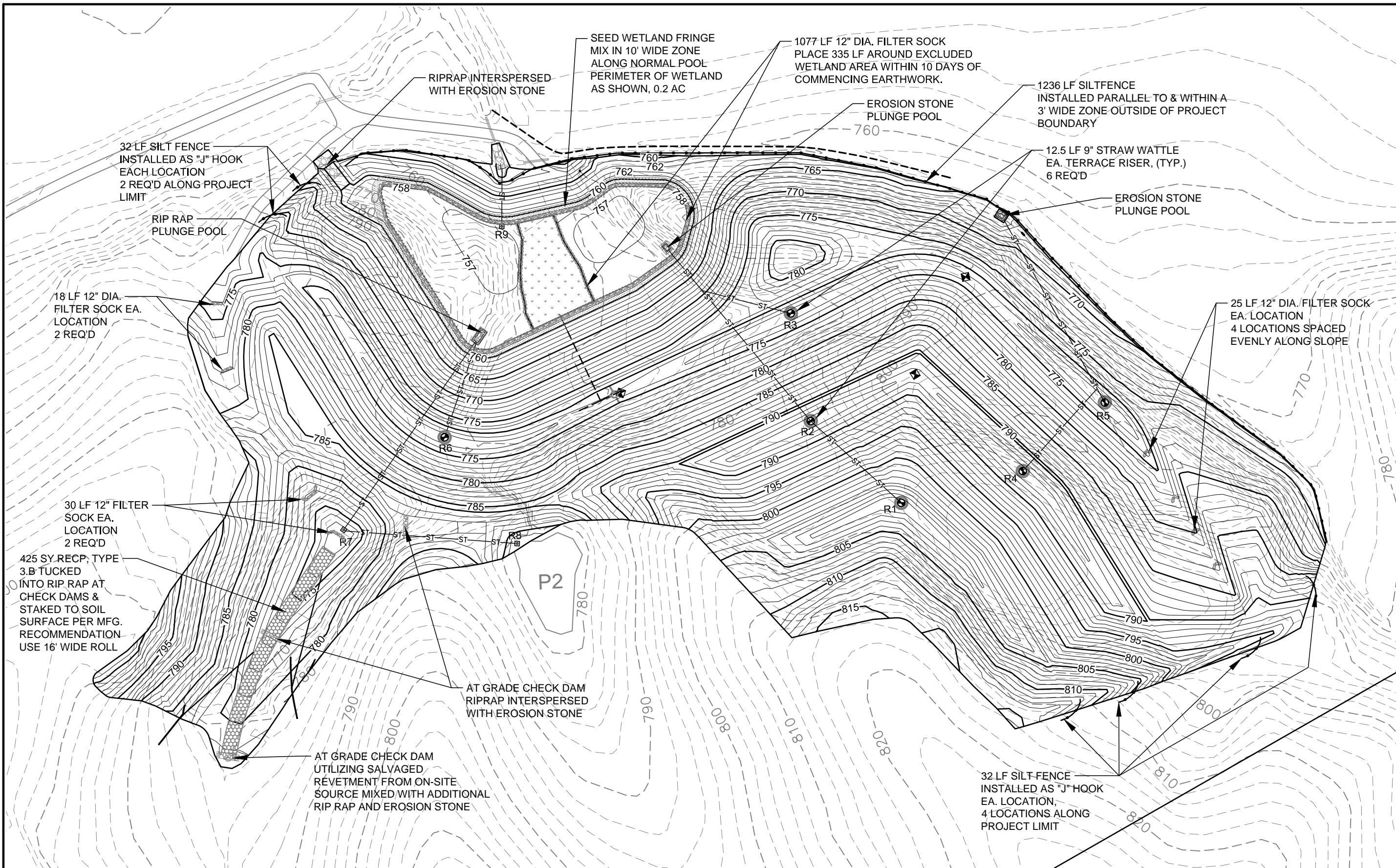
INSPECTIONS:

- 1. SITE INSPECTION IS THE RESPONSIBILITY OF THE CONTRACTOR AND IT SHALL BE PERFORMED BY QUALIFIED PERSONNEL UNDER HIS OR HER INSTRUCTION. INSPECTIONS SHALL BE PERFORMED ONCE EVERY SEVEN (7) DAYS.
- 2. ALL INSTALLED BMPs SHALL BE INSPECTED FOR CONDITION AND EFFECTIVENESS.
- 3. SITE INSPECTION REPORTS SHALL BE PROPERLY SIGNED BY THE PERSON CONDUCTING THE INSPECTION. THE REPORT SHALL INCLUDE:
 - A) DATE, NAME AND TITLE/POSITION OF THE INSPECTOR;
 - B) WEATHER INFORMATION;
 - C) LOCATION OF SEDIMENT/POLLUTANT DISCHARGE(S);
 - D) BMPs THAT ARE NEEDED, REQUIRE MAINTENANCE, OR HAVE FAILED,
 - E) CORRECTIVE ACTIONS REQUIRED;
 - F) CHANGES/UPDATES TO THE SWPPP.
- 4. THE FINDINGS OF EACH INSPECTION SHALL BE RECORDED AND KEPT AT THE SITE IN THE SWPPP BOOK. THE CONTRACTOR SHALL BEGIN CORRECTIVE ACTION ON ALL FOUND AS SOON AS PRACTICABLE.
- 5. THE SWPPP MAY BE REVISED BASED ON FINDINGS OF THE INSPECTIONS. SUCH REVISIONS SHALL BE MADE WITHIN SEVEN (7) DAYS OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS.
- 6. COPIES OF INSPECTION REPORTS WILL BE RETAINED WITH THE SWPPP FOR THREE (3) YEARS FROM THE DATE THE PERMIT COVERAGE TERMINATES.

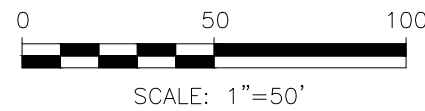
MAINTENANCE:

- 1. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES IN PROPER WORKING ORDER FOR THE DURATION OF THE CONTRACT. IF A PRACTICE IS NO LONGER NEEDED AS DETERMINED BY THE DIVISION OR ENGINEER, IT SHALL BE REMOVED.
- 2. MAINTENANCE INCLUDES CLEANING, REPAIRING, OR REPLACING AS REQUIRED. IN GENERAL, MAINTENANCE SHALL BE PERFORMED PRIOR TO THE NEXT ANTICIPATED STORM EVENT.
- 3. REMOVE SEDIMENT FROM SEDIMENT TRAPS, DITCHES, AND SILT FENCES WHEN THEIR INSTALLED CAPACITY IS REDUCED BY FIFTY (50) PERCENT OR MORE.

DESIGN BY: WJG	DRAWN BY: WJG	CHKD. BY: MLB	ISSUED: 08-14-2014	REVISED: 00-00-00	FILE: MEMMELAAR_AML.DWG	DESCRIPTION:			
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<div>DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246</div> <div></div>									
MEMMELAAR AML RECLAMATION PROJECT						SWPPP NOTES			
SHEET 20 OF 21									



- NOTES THIS SHEET:
- 1. CURL BEGINNING AND END OF EACH LENGTH STRAW WATTLE OR FILTER SOCK UPSLOPE.
 - 2. INSTALL ALL STRAW WATTLE AND FILTER SOCK ALONG THE CONTOUR AND EMBED STRAW WATTLE PER DETAIL 4-SHT. 12.
 - 3. INTERIM SEED MIX SHALL COMPLY WITH SEED MIX SHOWN IN SUPPLEMENTAL SPECIFICATIONS.
 - 4. WETLAND FRINGE SEED MIX SHALL BE SEEDED WITHIN A 10' WIDE ZONE ALONG PERIMETER OF WETLAND



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<div>MEMMELAAR</div> <div>AML RECLAMATION PROJECT</div> <div>SWPPP BMP's</div>		<div><div><div>IOWA</div><div>DEPARTMENT OF</div><div>AGRICULTURE</div><div>AND LAND STEWARDSHIP</div></div><div><div>DIVISION OF SOIL CONSERVATION</div><div>IOWA DEPARTMENT OF AGRICULTURE</div><div>AND LAND STEWARDSHIP</div><div>HENRY A. WALLACE BUILDING</div><div>502 E. 9th STREET, DES MOINES, IOWA 50319</div><div>(515)281-4246</div></div></div>				REVISION:	DATE:	DESCRIPTION:
						1	1-13-15	ADDED WETLAND FRINGE SEEDING AREA
						2		
						3		
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SHEET								
21 OF 21								